The American Journal of Surgery

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SPECIAL CASE REPORT ISSUE

FIFTY-SIXTH YEAR OF CONTINUOUS PUBLICATION

December 1947

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Skin

everted or end-to-end

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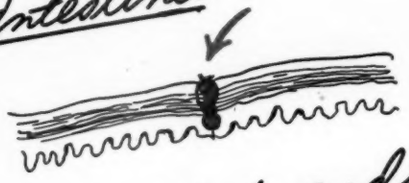
Stomach - Intestines



serosa-to-serosa or end-to-end

mucosa pouting through

Fibrin deposited at red arrows (↓) makes anastomosis gas and water tight

SUTUREGRAM

NUMBER FIVE (CONTINUED)

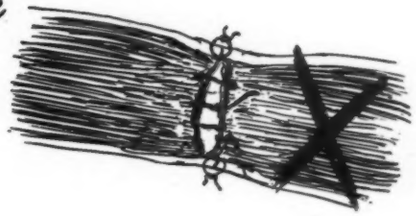
Fascia

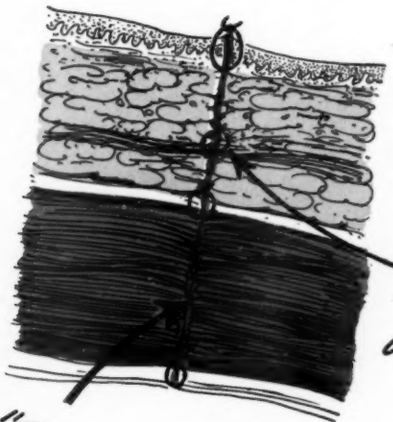
end-to-end or overlapped

Muscle and Fat

Fascia above and below sutured

Sutures in friable tissue cause necrosis. Thus, no holding power.





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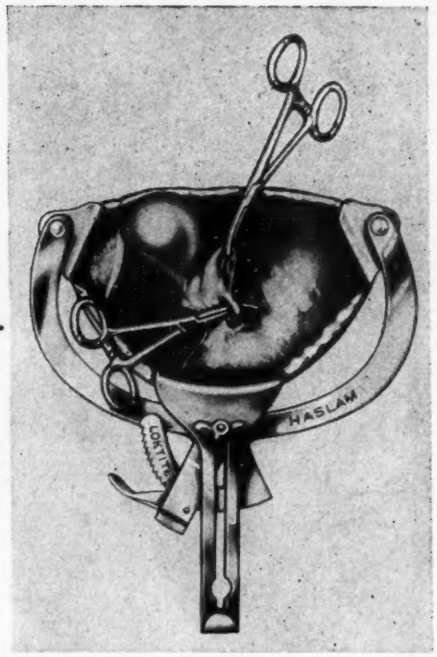

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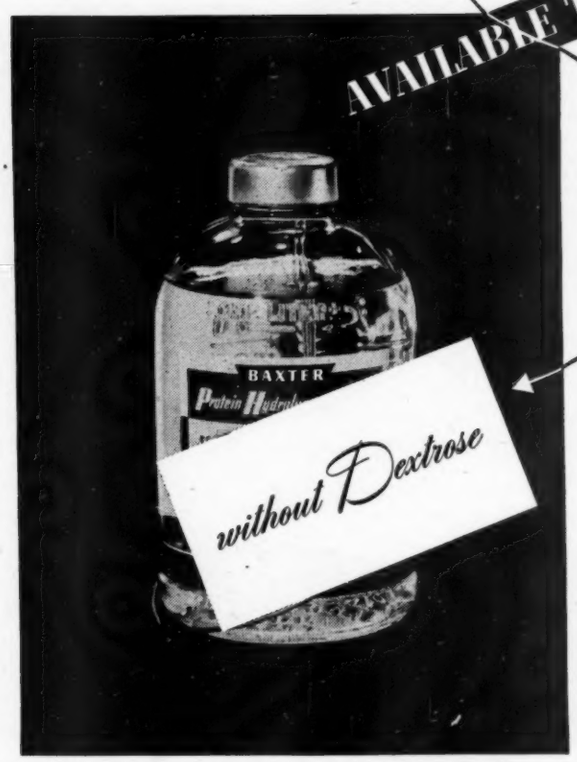

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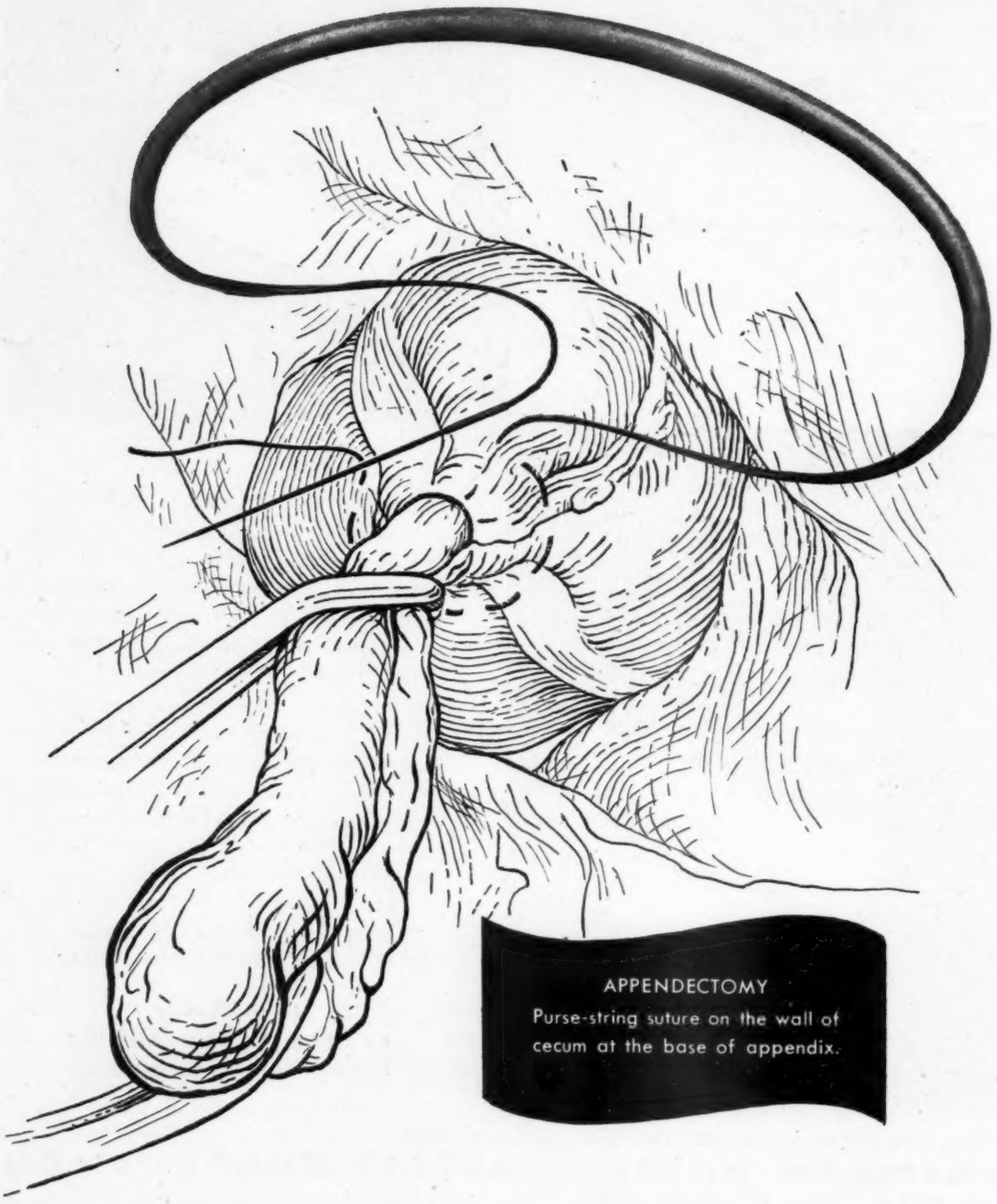

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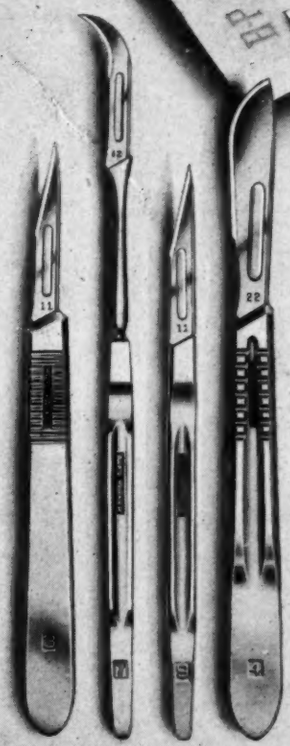

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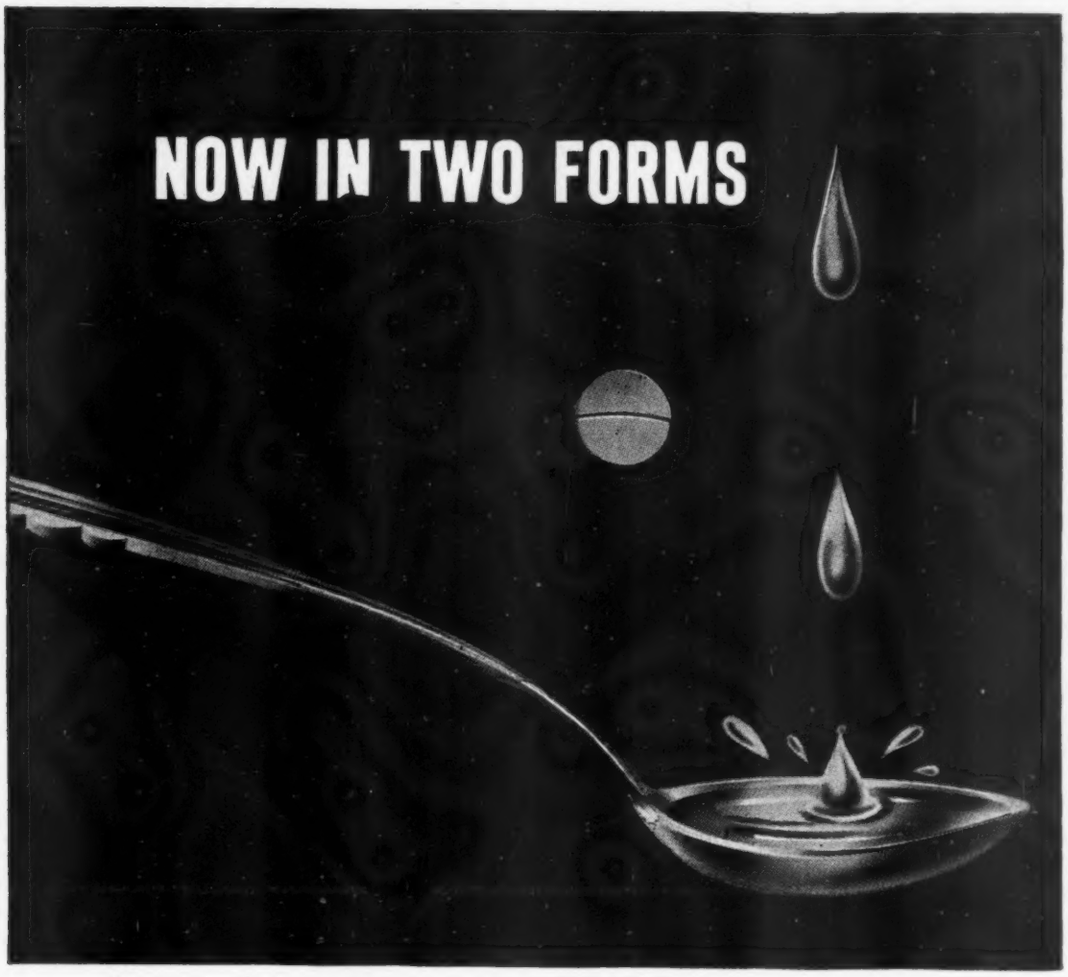

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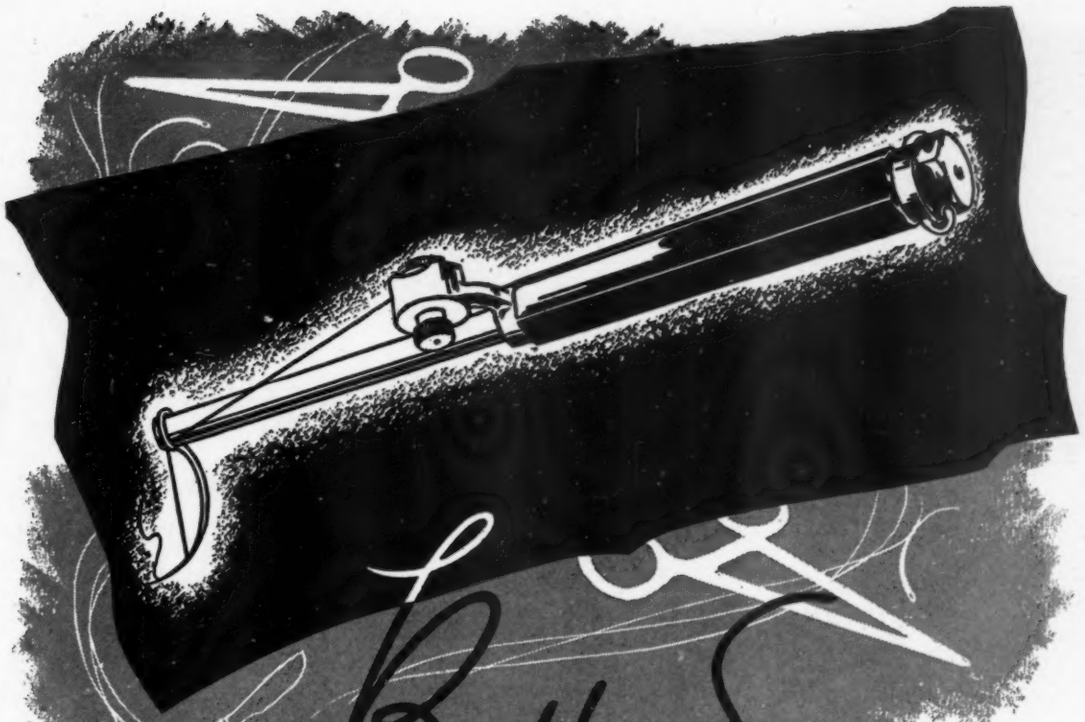

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[1] J.A.M.A. *135*:224 (Sept. 27) 1947.

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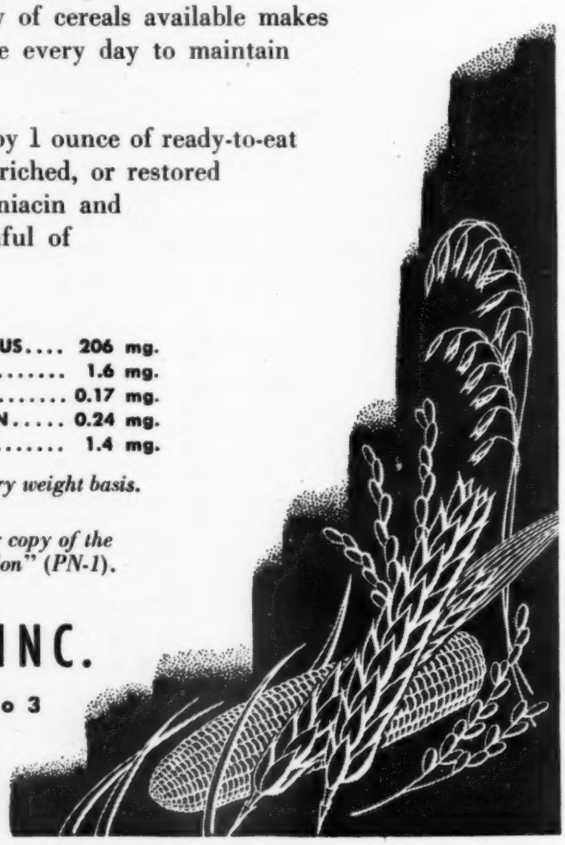

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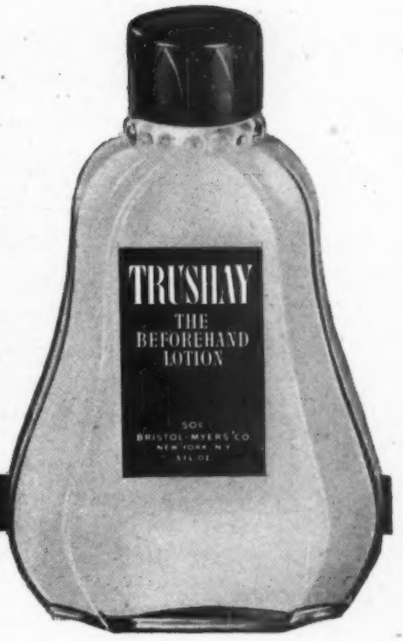

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whatever is deleterious and mischievous. I will give no deadly me
icine to any one if asked, nor suggest any such counsel; and in
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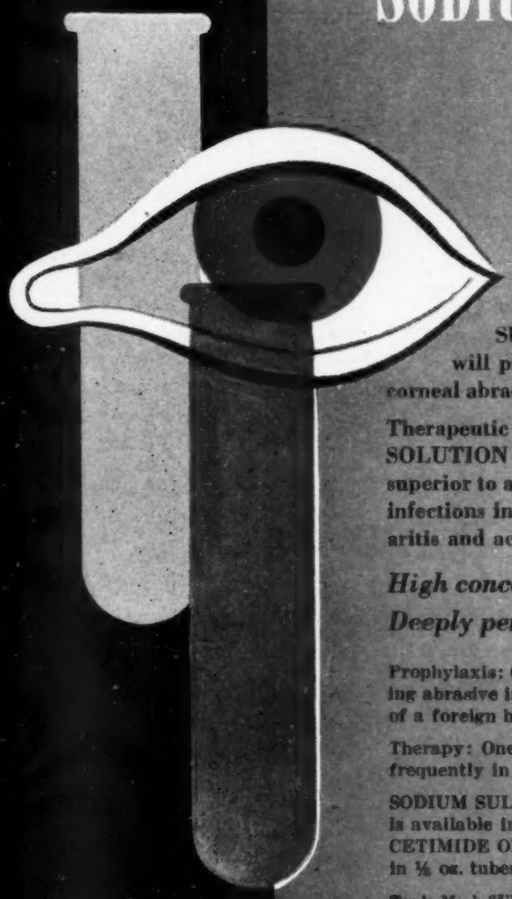

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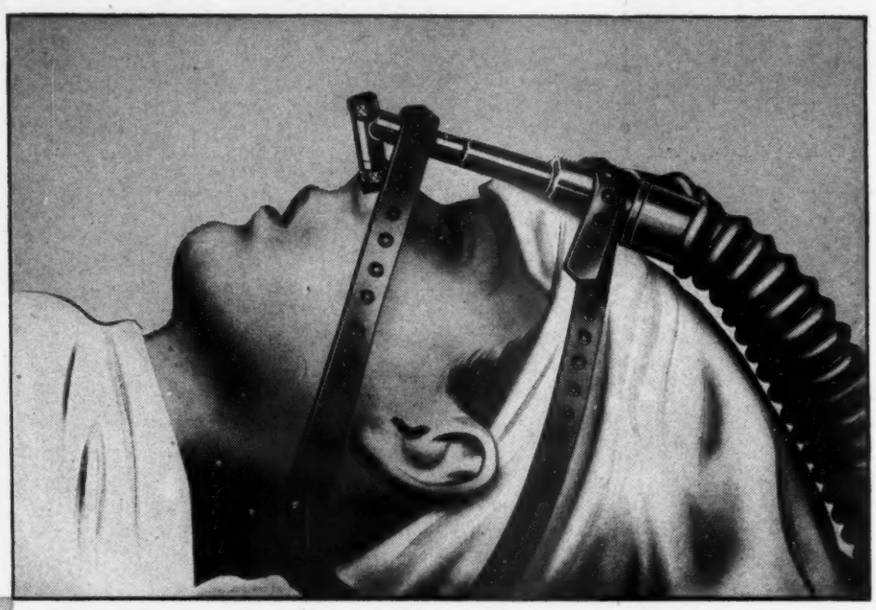

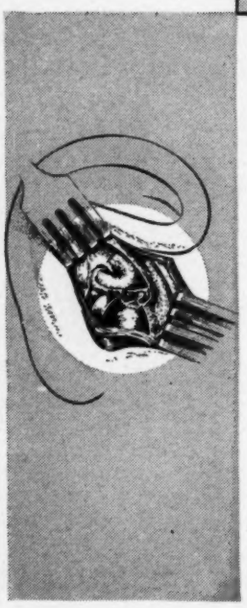

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*Flagg, P. J.: The fenestration operation : major hazard — the anesthetic, (editorial), Am. J. Surg., 72: 497-499 (Oct.) 1946.

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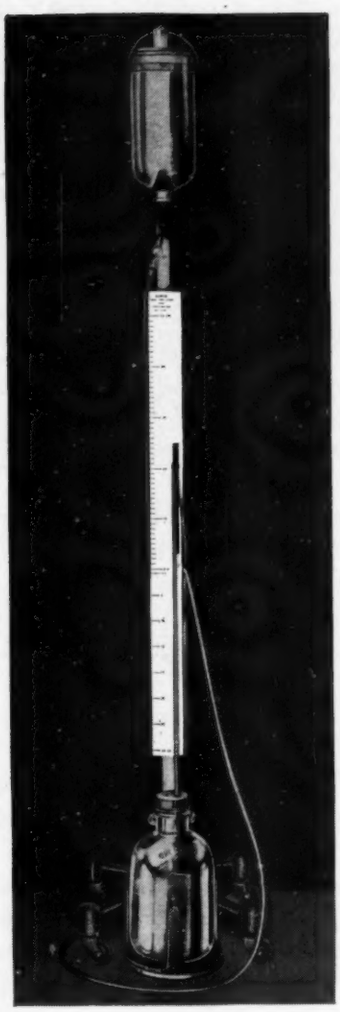

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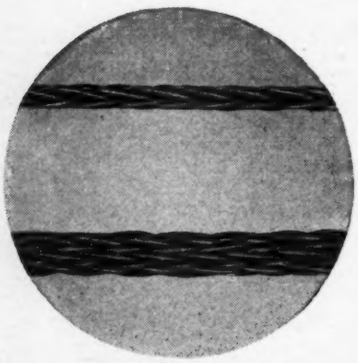

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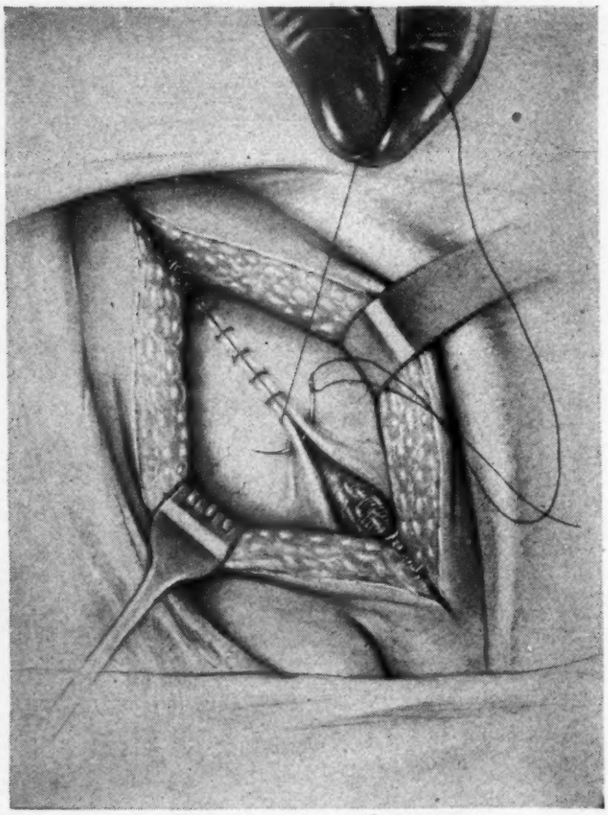

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*Craig: Clin. Med. 48:64, 1941 *Johnson: Surg., Gynec. & Obst. 65:458, 1937 *Brunner and de Takats: Surg., Gynec. & Obst. 68:1021, 1939

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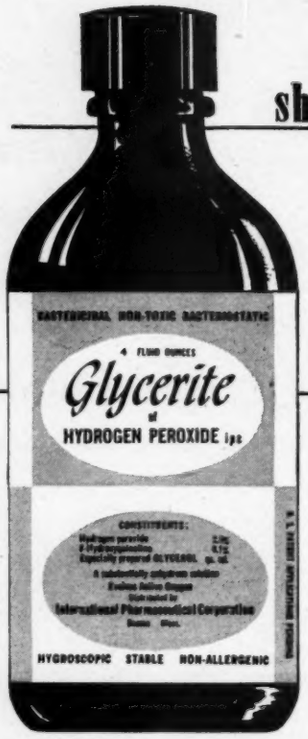

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VOL. LXXIV DECEMBER, 1947 NUMBER SIX

Editorial

HYPOSPADIAS—WHEN TO OPERATE

THE physiologic functions of the penis are concerned with urination and insemination. In hypospadias the act of urination can be performed but is often retarded by congenital stenosis of the hypospadiac meatal orifice which is extremely common. Consequently, the initial therapeutic step must necessarily be the establishment and maintenance of free urinary drainage by (1) meatotomy, (2) dilation with sounds or (3) both. Balanitic or glandular hypospadias is the mildest variety of this anomaly and there is no interference with insemination. But in the other forms of hypospadias in which the meatus opens more proximal, insemination cannot occur for anatomic reasons and correction of the reproductive defect is equally as important as the cosmetic improvement.

According to personal autopsy data, based on a study in 12,280 children, some variety of hypospadias affects one in every 1,100 newborn males, is usually first recognized by the obstetrician, is further "watched" by the pediatrician and ultimately comes to the attention of the surgeon be he general, plastic or urologic. The anomaly results from failure of the urethral gutter to fuse from behind forward and may be classified as glandular or balanitic, penile, penoscrotal, perineal or pseudovaginal according to the location of the ectopic meatus. The balanitic variety rarely merits surgical treatment except to insure a wide open meatus, and attempts to "pretty up" the end of the penis in these cases is indeed meddlesome surgery.

At present a vast confusion of notions concerning when to begin treatment prevades the thinking of both the medical and surgical advisors of the hypospadiac patient. Text books, both surgical and pediatric, advise operations at ages ranging from four years to puberty. Unfortunately the vain hope that the child will outgrow the malformation too frequently sways therapeutic suggestions. One of the most important components of the malformation is the congenital chordee brought about by the fibrotic ventral band which extends from the region of the normal meatus well back to the division of the penile corpora cavernosa. This structure is the congenitally hypoplastic fibrotic corpus spongiosum or its sclerotic remnants, growth of which does not keep pace with that of the penis; thus is formed a G-string which in turn causes downward bowing of the organ. This chordee is particularly marked when erection occurs. The penis thus restricted can grow neither straight nor to normal size until the ventral fibrotic cord is removed and the longer the growing organ remains bent downward upon itself, the less susceptible to surgical correction

will the deformity be. It is utterly foolish to make a new urethra in a penis thus firmly incurvated. Direction of the urinary stream will be exceedingly difficult and insemination impossible even though a patent new urethra is achieved. *It is advised, therefore, that the initial operation to correct the congenital chordee be carried out when the boy is nine to twelve months of age.* At this operation the hypoplastic fibrotic corpus spongiosum or G-string is widely excised from the region of the frenum to as far back as any restricting tissue can be palpated. Often this will be 2 to 3 cm. proximal to the ectopic meatus. The excision must be sufficient to permit the penis complete freedom of movement in all directions and without abnormal tension at any point along the shaft.

The construction of the new urethral canal proper is performed when the boy is five, six or seven years old and the penis is relatively straight. The urethroplasty proper must be delayed until penile and scrotal growth affords sufficient tissue with which to make the reconstruction which must be free of tension and accomplished with precise hemostatis.

In the interim between the initial operation and the subsequent urethroplasty, the chief concern is the maintenance of a normal urethral caliber and a widely open hypospadiac meatal orifice.

Regardless of the type of urethroplastic procedure the surgeon proposes ultimately to use, it is well to preserve as much of the prepuce as possible. Often the writer has been happy indeed to have this tissue for covering over large ventral cutaneous defects when the final urethroplasty is performed—whether one employs the Ombredanne procedure or not. Fortunately this precaution is now observed in increasing numbers of hypospadiac males subjected to ritualistic circumcision; only a token piece of tissue is taken and a generous prepucial hood is left for subsequent plastic utilization as required.

In summary, if the initial operation in the surgical treatment of hypospadias is performed by the time the boy is one year old, his penis will be given maximum opportunity to grow straight and to relatively normal size, the basic prerequisites to subsequent successful urethroplasty.

Meredith F. Campbell, M.D.

Case Reports

PERFORATING WOUND OF PERICARDIUM*

STUART Z. HAWKES, M.D.
Newark, New Jersey

WOUNDS of the chest involving the heart and great vessels are not uncommon. One type, penetrating wounds, are usually caused by stabbings, gunshot wounds or injuries to the chest in which a rib penetrates the pericardial cavity. If the victim does not succumb quickly, there is a chance of repairing the injury and of survival. With greater interest in these injuries, the immediate availability of blood in emergency and by decreasing the time between injury and operation, the chance of survival has improved. More of these operations are being performed successfully each year. Another type, compression wounds of the chest due to direct crushing force, are seen mostly in industry and highway accidents. They cause a rupture of one of the auricles or one of the large vessels with heart tamponade and rapid death. Surgery offers very little for these injuries.

The case to be reported is of interest for several reasons: The wound was caused by a mechanical pencil which penetrated the pericardium bruising the heart muscle. This type of injury has not previously been reported. The deportment of the injured person was interesting. The findings on admission and at operation were also unusual.

CASE REPORT

G. A., a fifteen year old High School student, was running for a bus on icy pavement on February 5, 1947, when he slipped and fell. He was carrying a mechanical pencil in the left chest pocket of a sweater. He picked himself up and continued to board the bus without any knowledge of serious injury. However, when inside the bus, he noticed a pain in the left chest over the heart and found that the pencil had penetrated his chest and was sticking out through his clothing. Several of his fellow students immediately tried to pull the pencil out but he requested that it be left in place until medical help could be obtained. An ambulance was called and he was removed to the Newark City Hospital.

On admission, the clothing was cut from around the protruding pencil. It was found to lie in the fifth interspace 2 inches from the midline just medial to the left nipple and pointed in an upward direction. About 4 cm. of the pencil protruded from the chest. (Fig. 1.) The protruding portion was oscillating regularly with each beat of the heart. The patient was apparently in good condition but was apprehensive. The pulse was 88; blood pressure 120/100. He was given ¼ gr. of morphine sulfate hypodermically and 1,500 units of tetanus antitoxin.

He was removed from the emergency room to the Surgical Service of Doctor Royal A. Schaaf and preparations were made for operation. On admission to the ward a recheck showed the lung fields to be clear. There were no adventitious sounds. The heart sounds were normal except for slight diminutions in intensity. Five minute checks of his pulse, respirations and blood pressure showed no change. He was typed for transfusion. A massive penicillin dose was administered. An x-ray showed the radio-opaque foreign body, one end of which was on the level with the inferior margin of the anterior third of the left third rib; the other end was just medial to the anterior end of the left fourth rib. The intrathoracic portion extended cephaled and measured approximately 10 to 12 cm. The foreign body had

* From the Surgical Service of Dr. Royal A. Schaaf, City Hospital, Newark, N. J.

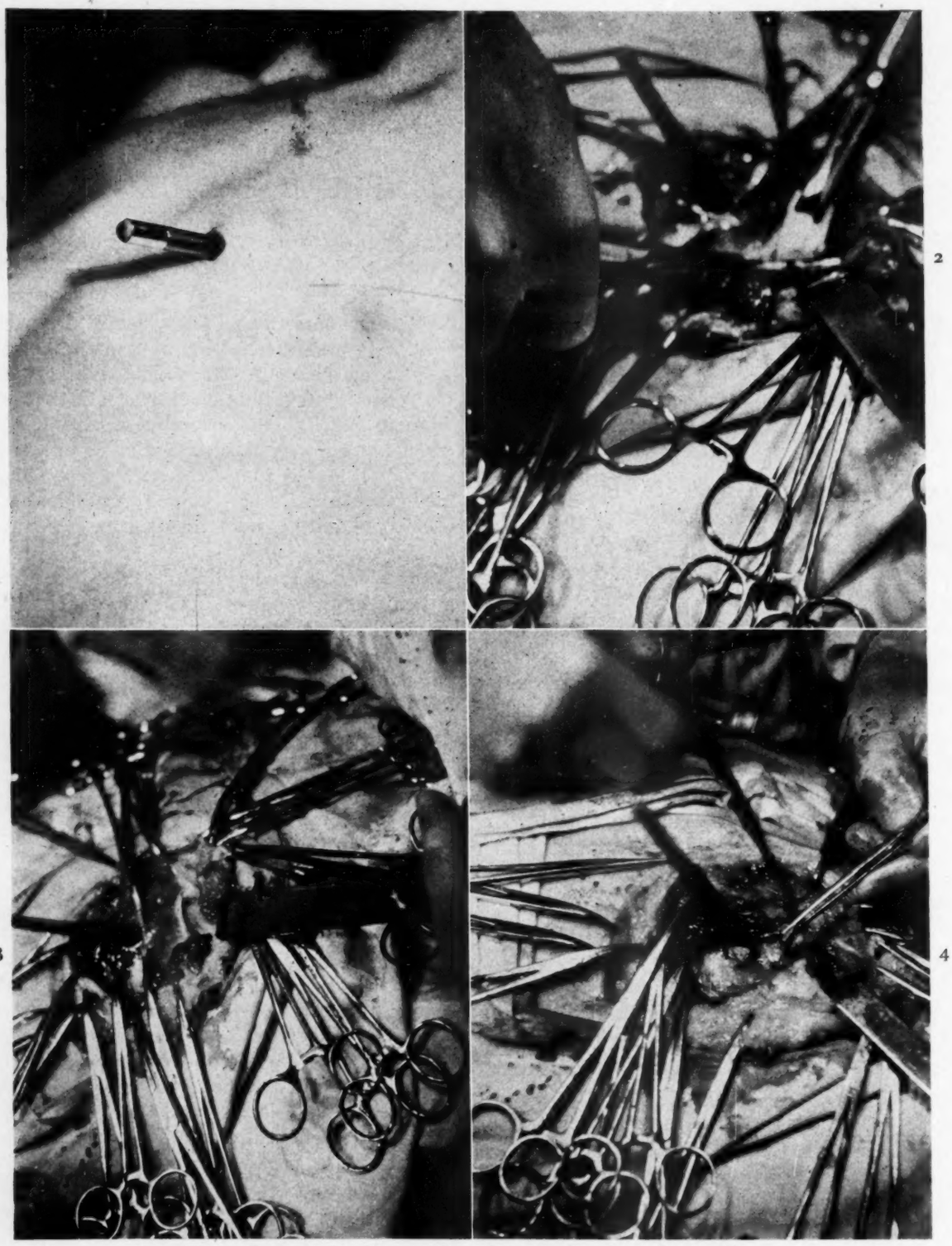

FIG. 1. Preoperative picture of pencil protruding from chest wall.
FIG. 2. Removing the fourth rib; pencil visible in operative wound.
FIG. 3. Chest cavity opened.
FIG. 4. Same as Fig. 3; haziness of pencil due to heart action.

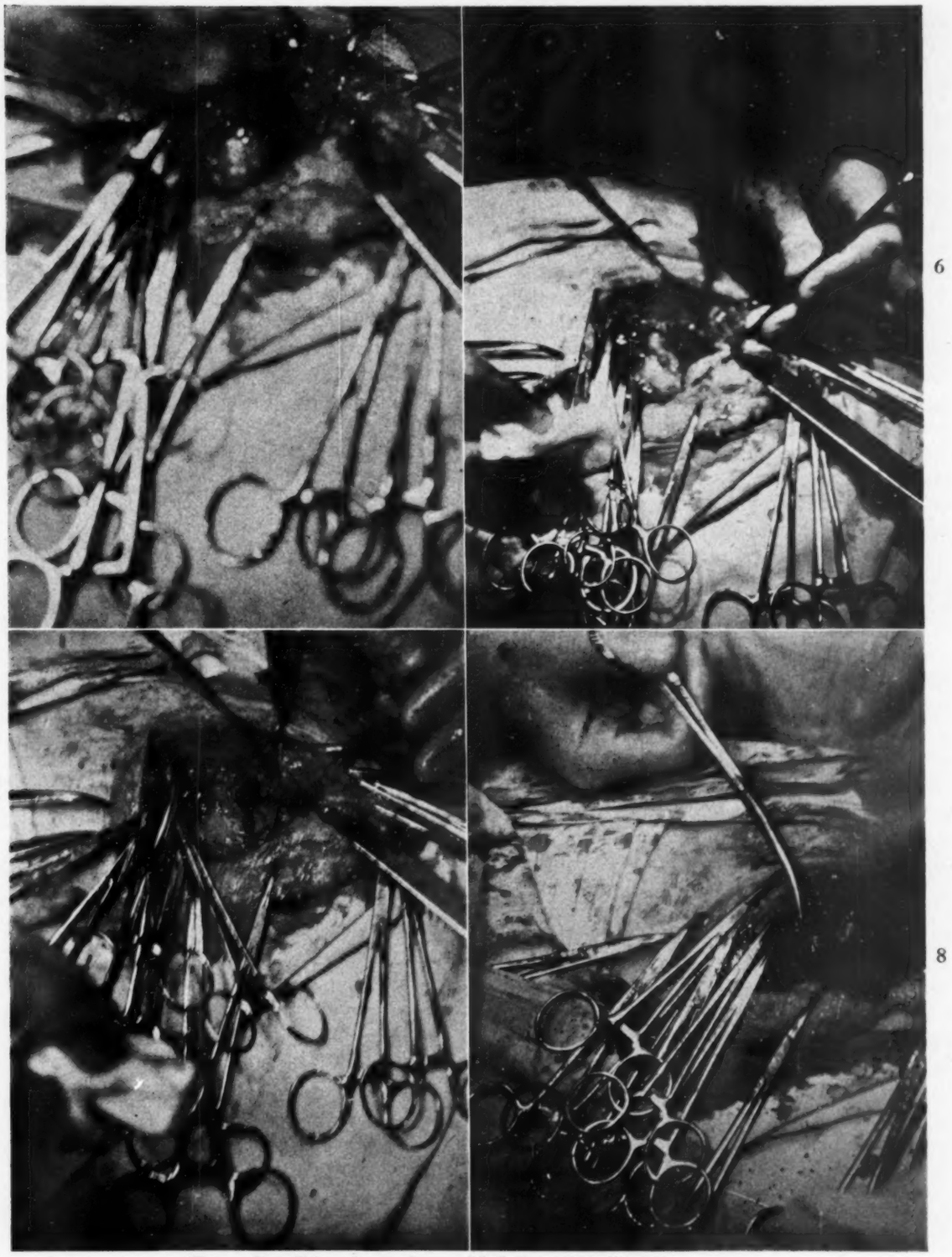

Fig. 5. Pencil has dropped out of hole in pericardium.
Figs. 6, 7 and 8. Stages in opening pericardium to explore heart.

penetrated the chest wall and had reached or pierced the pericardium.

The patient was taken to the operating room where an exploratory pericardotomy was done under endotrachial, gas-oxygen-ether anesthesia through an 8 inch hockey stick incision, which was made along the left border of the sternum beginning at the third rib and extending downward and laterally. The skin incision was joined to the puncture wound caused by the pencil by an incision at right angles to it. The pectoralis major and minor were reflected upward and laterally, care being taken not to dislodge the pencil. Six inches of the fourth and fifth ribs were removed subperiostally, beginning at the sternal junction. The intercostal vessels were clamped, cut and ligated. The pleura was opened revealing the pencil still in place, having penetrated the pericardium and still pulsating with each heart beat. The pericardium was opened longitudinally. At this point the pencil fell out of the wound. The apex of the heart was grasped in the hand; no gross bleeding or penetration of the heart chambers was found. There was a small contusion of the heart muscle over the left ventricle 1 cm. lateral to the descending branch of the right coronary artery. About 2 ounces of blood found in the pericardium was removed. Reexamination of the contused area of heart muscle showed that the bleeding had stopped. The pericardium was closed with interrupted cotton sutures and the wound in the chest wall was closed in layers similarly. The patient remained in good condition during the operation. The pulse stayed below 95 beats per minute throughout. The blood pressure at the start of the operation was 100/66. During the operation the systolic pressure slowly and continuously climbed to 200, the diastolic remaining between 70 and 80. The blood pressure immediately postoperatively was 120/78.

He was given large amounts of penicillin (100,000 units every three hours) and 1 Gm. sulfadiazine every four hours postoperatively. An electrocardiogram taken the next day was interpreted by the medical consultants to show (1) sinus tachycardia; (2) left axis shift; (3) an elevated S-T wave with an upright QRS, "as is found in pericardial effusion." The P-R interval was normal. A portable chest x-ray taken three days postoperatively showed cloudiness in the left base suggesting pleural effusion. The left lung was partially collapsed. A 6 foot plate taken one week later showed the pleural effusion at the left base still present. The pericardial shadow was reported slightly enlarged, with a cardiothoracic ratio of 15.5 cm. to 28.5 cm. A second 6 foot plate, taken on February 24th, showed pleural effusion still present at the left base with some beginning absorption. The cardiac shadow was globular in shape with a cardiothoracic ratio of approximately 16 cm. to 28.5 cm. Findings were considered consistent with pericardial effusion.

The patient made an uneventful recovery. His temperature and pulse were normal on the fifth postoperative day. The wound remained free from infection throughout. He was allowed out of bed on the seventeenth day after operation and returned home three days later.

An electrocardiogram taken six weeks after the operation was normal, as was an x-ray at this time, except for the missing resected ribs. The patient was allowed to return to school and has been leading a normal life except for athletic restrictions.

COMMENT

This boy exercised considerable intelligence in not allowing the pencil to be removed at the time of the accident.

When seen at the hospital, it could not be determined if the pencil had penetrated one of the chambers of the heart. For this reason, the operation was performed leaving the pencil *in situ* while removing chest wall structures around it. This was considered necessary until the pericardium had been opened and the exact damage assayed. Had massive bleeding been coincident to removal of the pencil, it could not have been controlled until the pericardium was widely open and the heart grasped.

Acknowledgment is made to Dr. John C. Van Dyne for the photographs appearing herein.

INTUSSUSCEPTION IN ADULTS*

REPORT OF A CASE DUE TO ABERRANT PANCREAS

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UNLESS a physician has personally encountered a case of intussusception in an adult he is apt to think of it, if at all, as a very rare condition. Uncommon as it is, when compared either with the other lesions of the bowel for which most laparotomies are performed or with the incidence of intussusception in infants and children under fifteen years of age, it does occur with sufficient frequency to make its recognition and proper treatment a matter of concern to the general surgeon. Ten per cent of one series of 115 cases of intussusception have been reported as occurring in adults above the age of fifteen. Four of fifty-nine cases in a similar series were adults over twenty-one while nine out of twenty-seven in a third series were adults.[1]

At the New York Hospital during the eleven-year period, 1935 to 1945 inclusive, there were four proved cases of intussusception in adults and fifty-one cases of intussusception in children less than fifteen years of age among 180,266 admissions. The ratio of adults to children in this series was approximately 1 to 13.

It is safe to say, therefore, that about one out of every ten or twelve cases of intussusception occurs in an adult or late adolescence although other investigators have put the ratio as low as one out of every twenty or twenty-five.[2,3] Unfortunately, at the New York City Hospital, where the case to be presented was admitted, the ratio of adult to child intussusception can not be determined from the records.

Tumors frequently are present in intussusception. In a classical review, Eliot and Corscaden[1] found among some 300 cases collected and reviewed from the literature. The presence of the tumor presumably was the cause of the invagination. Christopher,[4] in 1936, added fifty-nine more cases from the literature, in which the intussusception was due to tumor, and reported two cases of his own. The tumor mass usually lies at the apex leading the invaginated bowel along. In only two instances, quoted by Eliot and Corscaden, was the mass at the base. The majority of the tumors are benign. Pancreatic tissue forming the tumor, as was present in our case, has been reported only three times. Eliot and Corscaden mention a male child four years of age in whom "an accessory pancreas in the blind end of a diverticulum had formed a pedunculated tumor in the lower ileum." Christopher cited two other cases with accessory pancreatic tissue forming part of the intussusceptum.[5,6]

The clinical picture of intussusception in the adult frequently does not follow the classical pattern presented in infancy or childhood. The diagnosis in a very young person is fairly obvious for there is usually obstruction with vomiting, an elongated, moveable, palpable mass, which may change its size and position, and a bloody mucous discharge from the rectum. In the adult the course may be more insidious in onset and more prolonged in its duration. There may be constipation, diarrhea or normal bowel function at times; blood and mucus are frequently lacking; a mass may not be palpable owing to a thick fatty abdominal wall or, as in the case to be presented, well developed musculature; and the history of pain may be very misleading and simulate that of cholelithiasis, peptic ulcer or ureteral calculus.

In the acutely obstructed adult the only

* From the surgical service of Dr. Preston A. Wade, New York City Hospital.

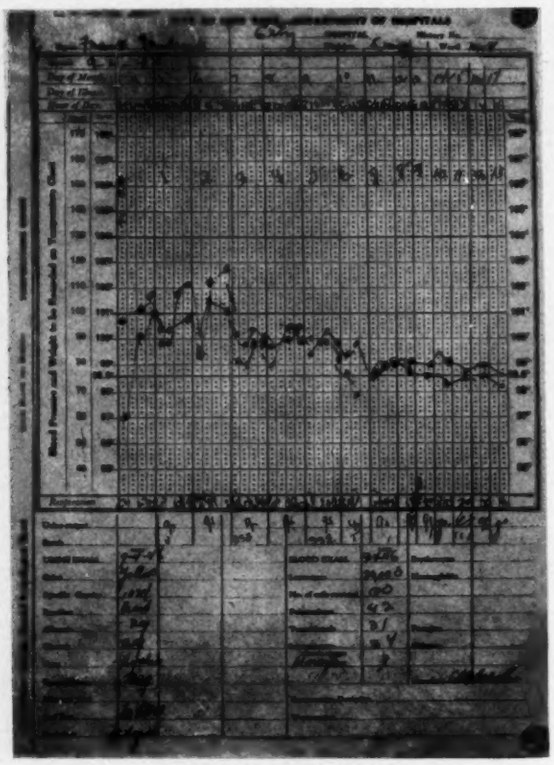
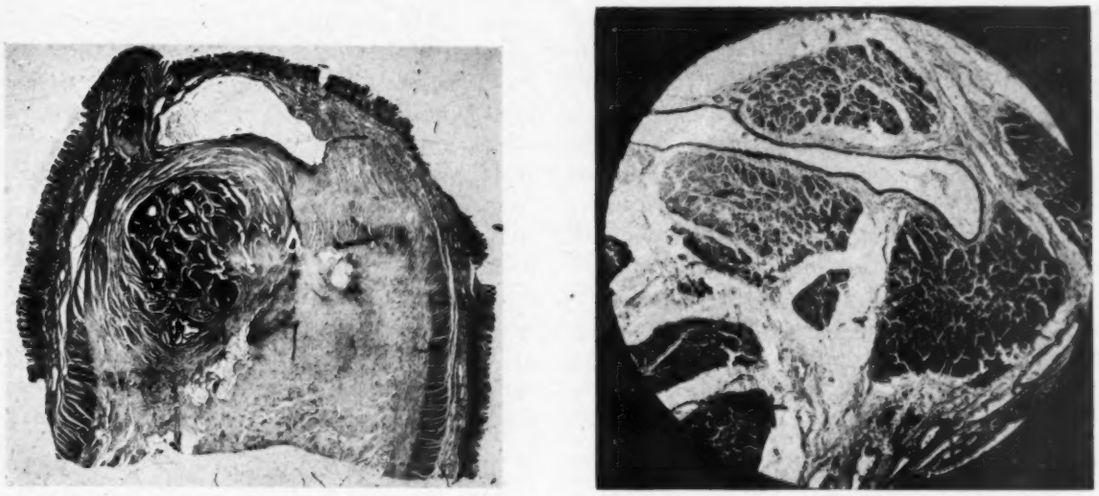


Fig. 1. Chart showing clinical course.

effective treatment is surgical. If the intussusception can be reduced readily under direct vision, this should be done but vigorous and prolonged attempts should not be made. If the intussusception is due to a tumor or Meckel's diverticulum, the latter should be removed even though this involves resection of a loop of bowel; otherwise the condition is bound to recur. When the intussusception is irreducible no time should be lost in performing a resection well away from the limits of the involved segment. Immediate primary anastomosis is then advisable when the lesion is confined to the small bowel. Rarely should it be necessary, because of the patient's poor general condition, to exteriorize the involved loop or its resected ends. The latter procedure complicates the picture tremendously due to the drainage of small intestinal contents and the necessity of a subsequent operation. In lesions of the large bowel which can be mobilized, ex-

Fig. 2. Photograph of resected intestine opened to show the mucosal surface. The large arrow points to the tumor mass at the upper pole of the intussuscepted loop which has been partially released to demonstrate the site of tumor more clearly. The small arrow points to the region (the small light area) through which the ducts emptied into the lumen of the intestine.



A B

FIG. 3. A, low power view of the tumor showing the preserved intestinal mucosal covering and the dense hyaline tissue enclosing the pancreatic acini and ducts. B. higher power view which shows the acinar and duct structures.

teriorization and resection by either the Paul—Mikulicz or the Rankin obstructive technic may be preferred as offering additional safety although it requires two stages.

CASE REPORT

F. F., a twenty-nine year old male elevator operator, was admitted to the New York City Hospital at 8:00 A.M. on September 4, 1946, with the chief complaint of severe abdominal pain. He had returned from work at 11:30 P.M. the preceding night and, about one hour after having consumed some bread and soup with four glasses of beer, he experienced severe pain in the upper abdomen. The pain was associated with nausea and he vomited a considerable amount of greenish material. The pain became progressively worse and gradually localized in the mid-upper abdomen. The past history was significant in that he had always had a poor appetite and for a year or more had had occasional attacks of "indigestion" lasting half an hour to an hour after meals which was relieved by taking "alkaloids." The present attack was similar to others but more severe. There was no history of constipation, diarrhea, bloody or tarry stools, preprandial pain, jaundice or aversion to fatty foods. He was a recently discharged veteran and had been stationed in Panama where an appendectomy had been performed in 1936. It was noted in his family history that his father died of pulmonary tuberculosis.

The patient was a well developed and nourished young white male in acute distress, restless, perspiring and moving about in bed in an attempt to relieve his pain. He kept his legs flexed on the abdomen. His temperature was 97°F., pulse 98; respiration 22; blood pressure 165/90. Physical examination was negative save for the abdomen which was moderately distended with marked involuntary spasm in the mid-epigastrium and periumbilical regions. The liver, spleen and kidneys could not be felt nor were any masses palpable although examination was rather unsatisfactory due to a thick muscular wall and the presence of spasm. The abdomen was slightly tympanitic to percussion and there was audible peristalsis on auscultation. Rectal examination revealed acute tenderness high up but no blood was noted on the examining finger and no masses could be felt.

The urine was negative except for an occasional hyaline cast. A blood count showed: hemoglobin 97; red blood cells 4,700,000; white blood cells 20,000; polymorphonuclears 42; transitionals 31; lymphocytes 24; monocytes 3. An x-ray of the abdomen with the patient erect failed to reveal any free air beneath the diaphragm.

A presumptive diagnosis of perforated peptic ulcer was made and at 10:30 A.M. on September 4, 1946, ten hours after the onset of his symptoms, an exploratory laparotomy was performed under spinal anesthesia through a right rectus muscle splitting incision.

There was a slight amount of clear free fluid in the peritoneal cavity. The stomach, duodenum and gallbladder were normal. About 15 cm. proximal to the ileocecal junction a large mass was encountered which proved to be an ileoileal intussusception. This mass measured 30 cm. overall in length and 6 cm. in diameter. It was bluish red, tense and firm. Loops of bowel proximal to the intussusception were moderately distended while those distal to it were collapsed. The vessels in the adjacent mesentery were thrombosed and no pulsations could be felt in them. As all reasonable efforts to reduce the intussusception were unsuccessful, an immediate resection was done about 6 cm. from either end of the intussuscepted mass. The intervening mesentery also was removed. A primary open end-to-end anastomosis was then effected and the abdomen was closed in layers with silk, without drainage.

Following operation, a Miller Abbott tube was passed and the patient was maintained on intravenous fluids until the third day when oral feedings were started. He was on a full normal diet by the sixth day at which time he was allowed out of bed. The temperature and pulse record is reproduced in Figure 1. At no time was he distended, his recovery was remarkably smooth, the wound healed *per primam* and he was discharged from the hospital September 19, 1946, fifteen days after admission and operation.

Report of the pathologist (Dr. James R. Lisa) is as follows: The section of small intestine (Fig. 2.) measures 35 cm. in length and the serosa is smooth. The distal 29 cm. is dilated to a circumference of 8 cm., the proximal portion is only slightly less. At the junction there is a thickened white serosal portion. On opening the lower part an intussuscepted loop is displayed extending its entire length, deeply injected, 5 cm. of the tip being cyanotic. The upper loop on opening appears normal down to the point of origin of the intussusception where there is a marked constriction, corresponding to the thickened serosal area. On releasing the invaginated loop a rounded tumor mass is found at this point 3 cm. in height and 2.5 cm. through the base, covered with preserved mucosa. At the tip is a small pouting circular area, apparently ulcerated. On section, the mass is solid, firm and white with a central nodular hard mass. At the tip is a small cyst. There is no evidence of a Meckel's diverticulum.

Microscopically, the tumorous mass consists of normal acinar pancreatic tissue with its ducts lying in a densely hyaline connective tissue sealing the outer muscular coats. (Fig. 3A.) Toward the tip the muscle coats are lost, the ducts become dilated; the cystic area, being a greatly dilated duct, is visible with the naked eye. The surface is covered with normal intestinal mucosa through which the pancreatic ducts empty into the lumen at the point which presented as the pouting area and is grossly visible. Islet tissue is absent. (Fig. 3B.) Other portions of the loop show only those changes due to the strangulation of intussusception.

Diagnosis: Intussusception of ileum due to tumorous, aberrant, pancreatic tissue.

SUMMARY

A case of intussusception in an adult caused by a solid tumor of aberrant pancreatic tissue is presented. The clinical picture and treatment of intussusception is considered and the literature on the subject briefly reviewed.

REFERENCES

1. Eliot, E. and Corscaden, J. A. Intussusception with special reference to adults. *Ann. Surg.*, 53: 169, 1911.
2. Hinton, J. W. Acute primary intussusception in the adult. *Ann. Surg.*, 84: 100, 1926.
3. Perrin, W. S. and Lindsay, E. C. Intussusception. *Brit. J. S.*, 9: 46, 1921.
4. Christopher, F. Intussusception in adults. Two additional cases. *Surg. Gynec. & Obst.*, 63: 670, 1936.
5. Benjamin, A. E. Accessory pancreas with intussusception, *Ann. Surg.*, 67: 293, 1918.
6. Steiger, W. Pancreatic tissue in intestinal diverticulum as cause of secondary invagination. *Wien. klin. Wchnschr.*, 35: 909, 1925.

PSEUDOCYST OF THE PANCREAS*

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A REVIEW of the literature by Harrison and Cooper[1] in 1943 reveals fifty-two cases of pseudocysts of the pancreas of traumatic origin. Since then the literature includes one other case reported by Pascucci.[2] and we are reporting still another. A few reports which have not been included have recently occurred in some foreign journals.

Incidence. Many cysts of the pancreas occur as a result of infection and necrosis but there is a lesser number that occur as a result of traumatic injury. Jones[3] states that 20 per cent of oll cysts of the pancreas are traumatic in origin. Mahorner and Mattson[4] report that twenty-eight of 119 gave a history of trauma. Judd,[5] in a series of forty-seven cases, reports an incidence of 15.7 per cent and he also states that at the Mayo Clinic from 1921 to 1931, there were 700,000 admissions of which eighty-eight patients were treated surgically for pancreatic cysts and that the incidence of those being traumatic in origin was 17 per cent. Heiberg[6] says that one-third of all cases of cysts of the pancreas are traumatic in origin. Korte[7] believes that one-fourth of cysts of the pancreas follow injury to the upper abdomen. He reported on 117 patients in whom thirty-three gave a history of injury. Rabinovitch and Pines[8] report eleven cases of pseudocysts of the pancreas, none of which were traumatic in origin. Adam and Nishijima[12] report that there were only nine pancreatic cysts encountered at the Lahey Clinic from 1926 to October, 1945. A history of trauma was elicited in only one patient.

Etiology. According to Harrison's[1] explanation, these traumatic cysts of the pancreas arise following a crushing blow to the upper abdomen with compression of the pancreas against the lumbar vertebrae. This trauma causes a rupture of the pancreas with escape of secretion or inflammatory exudate into the lesser sac and then with the sealing of the Foramen of Winslow a cyst develops. Therefore, the cyst is not in the substance of the pancreas but in the immediate neighborhood, that is, in the lesser sac. There is no epithelial lining.

Drennen[9] states, "In the case where a cyst arises subsequent to the pancreatic injury, the following conditions probably obtain:

"The pancreas is torn or mashed in such fashion that some of the ducts are divided, with escape of pancreatic juice. Hemorrhage, of lesser or greater degree, occurs at the same time. If the peritoneal coat over the pancreas is torn, as is usually the case, then there will be fat necrosis involving the omentum. An adhesive peritonitis follows, sealing in the injured spot or spots of the gland.

"The pancreatic fluid continues to form, pushing its way between the peritoneal layers. Thus the cyst grows drop by drop, the endothelial lining of the wall contributing its share of fluid to dilute the pancreatic secretion. The color of the fluid varies as to the amount of blood contained.

"After a time when the intra-cyst tension has become very great, the torn ducts become sealed-off by contracting scar tissue, and at the same time the corresponding parenchyma cease to function and atrophy. The endothelium of the cyst wall may continue to secrete its fluid long afterward, the cyst thus grows larger and larger."

Contents of the Cysts. Harrison[1] lists the contents of these cysts as varying amounts of blood, pancreatic secretion, inflamma-

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tory exudate and necrotic fluid. A cyst containing all of the three pancreatic ferments is only suggestive of its being pancreatic in origin because any cyst containing blood will have these ferments in it. However, if the cyst contains a great deal of trypsin, it is right to suppose that it is of pancreatic origin. Amylopsin is obtained from other fluids in the body as is steapsin. The absence of pancreatic ferments does not rule out a pancreatic cyst because ferments may be absent in old cysts.

Symptoms and Physical Findings. Harrison[1] in his discussion says that at the time of the accident there is extreme pain accompanied by nausea, vomiting, weakness and shock. Occasionally, the symptoms are mild but, because of their severity, most patients are sent to the hospital for a few days observation. Following the injury, the examination reveals tenderness in the epigastrium with muscle spasm in that area. These usually subside in a few days. When the cyst develops, the accompanying symptoms are those related to mechanical interference with the function of the surrounding organs. Upper abdominal fullness with gaseous distention occur with a loss of appetite, nausea and vomiting. This is usually followed by cramping or aching epigastric discomfort. Weakness, loss of weight and general debility manifest themselves as the condition progresses. About this time, the patient feels the mass between the xiphoid cartilage and the umbilicus. The mass is located in the lesser peritoneal sac, and is globular, smooth and usually slightly movable but not displaceable. It may or may not be tender. Sometimes there is a systemic reaction with elevation of temperature and a leukocytosis.

X-ray Findings. Because traumatic cysts of the pancreas are an effusion into the lesser peritoneal sac, Morrison's[10] list of roentgen signs may be of value in determining this condition. He states that a direct shadow of the effusion will be present if the collection of fluid is large. There will be a defect in the air or barium-filled stomach, probably on the lesser curvature and posterior wall in small effusions, downward displacement of the stomach to the left and posteriorly if the effusion is large. Kidney outlines will be preserved. There will be an increased pliability and compressibility of the gastric walls on fluoroscopic palpation. Chest findings are those of other subdiaphragmatic lesions, namely, elevation of diaphragmatic leaf with possible decreased respiratory excursion on the left.

Holt[11] states that a complete examination of the gastrointestinal tract is indicated if a cyst of the pancreas is suspected. If the cyst arises from the head of the pancreas, the duodenal loop will be widened with little or no deformity of the stomach. A cyst arising from the body of the pancreas displaces the stomach anteriorly and superiorly with variable distortion of the small bowel. If the cyst arises from the tail of the pancreas, there will be a deformity of the greater curvature of the stomach at or just above the mid-portion with anterior displacement. The splenic flexure of the colon may either be indented or displaced caudally.

Treatment. According to Harrison,[1] diagnostic aspiration is contraindicated because of the danger of going through the stomach, colon or small bowel. Operation with complete extirpation of the cyst wall, if possible, is the treatment of choice. This is not always possible because of its intimate relation to the surrounding structures. If the latter is the case, marsupialization must be resorted to and drainage instituted. Anastomosing the cyst with the intestinal tract, usually the jejunum, has been advocated for other types of pancreatic cyst but it is seldom necessary to do so in those having traumatic origin.

Results. Operation usually results in a permanent cure. In those patients in whom the cyst wall can be removed the results are very good. If one has to resort to marsupialization, then drainage for a protracted period can be expected but end results are usually good because once the tract closes there is seldom further trouble.

CASE REPORT

On August 29, 1945, K. C., a white male aged five years, entered Mercy Hospital, Council Bluffs, Ia., on the service of the Cogley Clinic with the history of having fallen from a bicycle fourteen days previously. He had just finished his evening meal and went for a ride on his bicycle when he hit a rut and lost control. Immediately after the accident, he walked about 40 feet in a stooped position holding his stomach before he fell exhausted and dyspneic. He was carried to the house and put to bed. An hour later he became nauseated and was taken to the doctor who examined him and sent him home. On the way he vomited twice and four times more during that night. The next day he vomited nearly every hour but stopped after hot packs were applied to the abdomen. During the next few days he ran an intermittant fever and became listless, pale and suffered anorexia. His white blood count began to rise and the pain in his abdomen continued so he was sent to the hospital after fourteen days of observation at home.

The physical findings revealed a thin, poorly nourished child with a temperature of 101.6°F. and tenderness in the upper abdomen. In the epigastrium, the circular impression of the handle bar, which did not have a grip, was plainly visible.

The laboratory findings disclosed that the red blood count was 3,100,000 with a hemoglobin of 68 per cent. The white count was 13,300 with 76 per cent polymorphonuclear leukocytes and 4 per cent stabs; there were 20 per cent lymphocytes. The urine was acid with a specific gravity of 1.030, the albumin was negative as was the test for sugar. The microscopic examination was negative while the sedimentation rate at the end of an hour was 29 mm.

The x-ray findings were reported as follows: "Film of chest shows no definite pathology. There appears to be a homogenous shadow in upper abdomen, may be a hematoma."

The preoperative diagnosis was a hematoma in the upper abdomen, possible hemorrhage from the spleen.

The patient was operated upon on the nineteenth day following injury under a general anesthetic. A high, left rectus incision was made and the mass in the upper left quadrant explored. The lesser sac was distended with a thin turbid fluid. The cyst was aspirated and its wall excised. The peritoneum was closed with No. 0 chromic. The fascia was closed with continuous and interrupted No. 0 chromic. Clips were used to approximate the skin edges. The patient received 500 cc. of whole blood during the operation.

The report of the fluid from the cyst revealed that the amylase content of the fluid was equivalent to 400 mg. of sugar, concomitant with that of pancreatic origin.

During the postoperative course the patient's temperature remained elevated for four days and then returned to normal. The patient steadily improved and he was dismissed on the fourteenth postoperative day entirely relieved of symptoms. The patient was well one year later with no symptoms or evidence of recurrence.

REFERENCES

1. Harrison, C. and Cooper, F. *J. Tennessee M. A.*, 36: 299–304, 1943.
2. Pascucci, L. M. Pancreatic cysts and lithiasis. *Am. J. Roentgenol.*, 52: 80–87, 1944.
3. Jones, E. S. *J. Indiana M. A.*, 37: 175–179, 1944.
4. Mahorner, H. R. and Mattson, H. *Arch. Surg.*, 22: 1018–1033, 1937.
5. Judd, E. S., Mattson, H. V. and Mahormer, H. R. Pancreatic cysts. *Arch. Surg.*, 22: 838–849, 1931.
6. Heiberg, R. A. Krankheiten der Pankreas. Wiesbaden, 1914.
7. Korte. System of Practical Surgery. By Von Bergman, Bruns and Von Mikulicz. Vol. IV, p. 726. Translated by Wm. T. Ball, et al. Philadelphia, 1904. Lea Bros.
8. Rabinovitch, J. and Pines, B. Cysts of the pancreas. *Arch. Surg.*, 45: 727–746, 1942.
9. Drennen, E. Traumatic pancreatitis. *Ann. Surg.*, 76: 488, 1922.
10. Morrison, M. C. Radiological findings in lesser sac effusions. *Canad. M. A. J.*, 52: 474–477, 1946.
11. Holt, J. F. The roentgen diagnosis of pancreatic cysts. *Radiology*, 46: 329–333, 1946.
12. Adams, Ralph and Nishijima, R. A. Surgical treatment of pancreatic cysts. *Surg., Gynec. & Obst.*, 181–187, 1946.

DEMONSTRATION AT OPERATION OF SPHINCTERIC ACTION AT THE TRUE GASTRIC STOMA*

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THERE has been considerable controversy in the literature as to whether or not a sphincter forms at the site of the gastric stoma following subtotal gastrectomy. The controversy becomes further complicated by the lack of a clear understanding as to just what the gastric stoma is following gastrojejunostomy. Most European surgeons[1] consider the circumference of the anastomosis as being the gastric stoma. This opinion is also shared by many surgeons in this country with whom we have discussed this problem. American literature is singularly lacking in any reports about the question of the gastric stoma. For this reason, in another publication[2] we endeavored to call attention to the fact that the "true gastric stoma" is not the circumference of the stomach outlet in the anastomosis but is only the circumference of the jejunum at the lower end of the anastomosis.

Vitkin[3] denies the existence of a sphincter following gastrojejunostomy as do many other European writers. Some, such as Wölfler, have shown what is considered to be a sphincter at the site of the anastomosis as a result of a Billroth 1. Other surgeons state that by plication of the intestinal circular fibers at the site of the anastomosis such a sphincter could be formed but would not be a true sphincter. On the whole, the consensus of opinion among surgeons everywhere is that no true sphincter is formed following subtotal gastrectomy, and that any demonstration of submucosal thickening is merely due to the plication of the layers at the site of the anastomosis.

Ravdin, Johnston et al.,[4] in a series of experimental studies, have shown that some peristaltic activity occurs at the upper end of the jejunum at the site of the anastomosis when different types of food are ingested. They consider this peristaltic activity to be caused by the normal peristalsis of the intestine due to stimulation of its mucosa by the irritative effect of certain foods or due to the normal physiologic response of the small bowel to the introduction of a bolus of food. They do not believe in the existence of a sphincter.

In our case report, not only was there a perfect demonstration that the "true gastric stoma" is that circumference of the jejunum at the site of the anastomosis (lower end), but definite sphincteric action was noted at this "true gastric stoma." Examination of Figure 1 demonstrates the appearance of the stomach at operation. The lower gastric wall (jejunum) was seen to bulge downward producing a relative displacement of the gastric stoma to the left. Note that there is a definite constriction at the "true gastric stoma" as shown in this figure. At operation this constriction was seen to relax and then constrict again much like the pylorus. Examination of Figures 2 and 3 show different phases of contraction and relaxation at the true gastric stoma. Only one narrow ring like a sphincter appeared to take part in this peristaltic activity.

CASE REPORT

A. P., a thirty-six year old colored man, was admitted to Grace Hospital for the surgical repair of an incisional hernia. He had been operated upon four years previously at which time a subtotal gastrectomy was done. This was an anterior gastrojejunostomy of the Polya type. Following this operation, the patient developed an incisional hernia.

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On examination, the patient was found to be a well nourished colored man. He lay comfortably in bed and did not appear acutely ill. An acneiform eruption was quite evident over his shoulders and back. His temperature was 98.6°F., pulse 80, respirations 20. Examination of his head, eyes, nose and throat were entirely normal. The lungs were resonant to percussion; voice and breath sounds were normal; tactile fremitus was normal and there were no râles. The heart was not enlarged to percussion. A soft, systolic, apical murmur was noted. Pulses were equal and regular and there was no pulse deficit. Heart rate was regular; blood pressure was 130/80. His abdomen was flat. There was a large mid-abdominal incisional hernia at the site of the previous operative scar. The recti muscles were widely separated. No tenderness was noted over the mass. The liver edge was not palpable. No masses were found other than the hernia and no spasm was present. The genitalia were normal and the extremities showed no pitting edema. Reflexes were also normal.

On January 11, 1946, under continuous spinal anesthesia a spindle-shaped incision was made about the old mid-line scar and the scar ex-

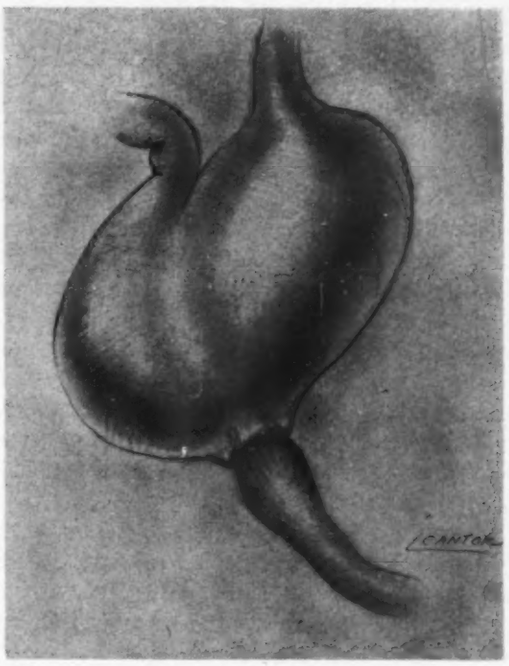
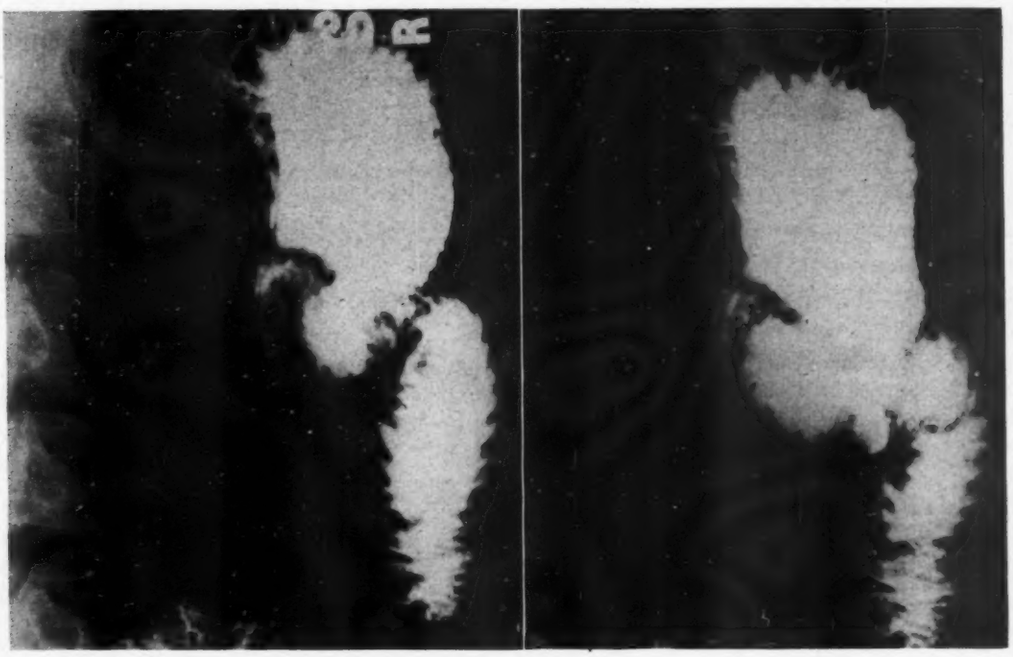


Fig. 1. Note the out-pouching of the lower gastric wall (jejunum). The "true gastric stoma" is now displaced to the left. The definite constriction is at the point of the true gastric stoma with the dilated jejunum beneath. Sphincteric action was noted clinically at this point of constriction.



2 3

Fig. 2. The constriction of the column of barium as it passes through the true gastric stoma. The proximal loop which is non-functional does not visualize. Note the down-pouching of the lower gastric wall (jejunum).

Fig. 3. This film shows the relaxation at the true gastric stoma permitting a free flow of the barium into the jejunum.

cised. On entering the peritoneal cavity, it was found that the jejunum was attached to the scar in several places and a perforation of the jejunum was avoided with much difficulty. A sac, about half the size of one's head, finally was freed from the layers of the abdominal wall. It was observed that at the site of the old gastric resection the jejunum was pouched downward so that it had a diameter of 2 or 3 inches, and at the lower angle of the Polya attachment of the jejunum to the stomach there was a definite constriction of the jejunum with a sphincter-like action. Under observation on the operating table, this portion of the jejunum would contract to one-half or one-third the diameter of the remaining jejunum and would then relax. It exhibited true sphincteric activity. The abdominal wall was closed by the Mayo method for ventral hernia repair. The inner two rows of sutures imbricated the abdominal wall from left to right, and an outer row of interrupted wire was added. The skin incision was closed with interrupted nylon and running catgut.

The patient developed lobar pneumonia on the fifth postoperative day but response to penicillin therapy was prompt and he made an uneventful recovery. He was discharged as cured on the thirteenth postoperative day.

SUMMARY

The case herein reported is quite uncommon in that it is rarely possible for the surgeon to have an opportunity to survey the site of the anastomosis while the patient is alive. The observations made at this operation clinically (by direct vision) prove two points: First, if Figure 1 is noted, it becomes quite evident that the stomach enlarged to accommodate normal meals postoperatively following subtotal gastric resection by the out-pouching of the jejunal wall, and second, a circular bundle of muscle fibers at the true gastric stoma became hypertrophic and by rhythmic contraction and relaxation showed all the characteristics of a true sphincter. Many surgeons have discussed the absence or presence of a hypothetical sphincter but never before, as far as we know, has it been possible actually to demonstrate its existence. We are at present engaged in experimental work to prove by means of microscopic sections whether such a sphincter usually forms. Figures 2 and 3 show roentgenograms taken of this patient. Note the contraction and relaxation as shown on the barium column passing through the true gastric stoma. Note also the downpouching of the lower gastric wall (jejunum).

CONCLUSION

A case of a man whose abdomen was opened to repair an incisional hernia is reported with the following observations: (1) A definite enlargement of the stomach by the mechanism of outpouching from the jejunal wall is noted. (2) A definite sphincter contracting and relaxing at the "true gastric stoma" was noted. (3) The "true gastric stoma" is the circumference of the jejunum at the lower end of the anastomosis and is not the entire circumference of the anastomosis.

REFERENCES

1. Bremer and Held. Quoted by Vitkin, S. F. Motor functions of stoma after resection. *Ann. Surg.*, 3: 27–48, 1940.
2. Kennedy, C. S., Reynolds, R. P. and Cantor, M. O. A study of the gastric stoma after partial gastrectomy. *Surgery*, 22: 41–47, 1947.
3. Vitkin, S. F. Motor functions of stoma after resection. *Ann. Surg.*, 3: 27–48, 1940.
4. Johnston, C. G. and Ravdin, I. S. Action of glucose on emptying of stomach. *Ann. Surg.*, 101: 500–505, 1935. Pendergrass, E. P., Ravdin, I. S., Johnston, C. G. and Hodes, P. J. Studies of the small intestine. *Radiology*, 26: 651–662, 1936. Ravdin, I. S., Pendergrass, E. P., Johnston, C. G. and Hodes, P. J. The effect of foodstuffs on the emptying of the normal and operated stomach and small intestinal pattern. *Am. J. Roentgenol.*, 35: 306–315, 1936.

NON-TRAUMATIC PERFORATION OF THE COMMON BILE DUCT

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SPONTANEOUS rupture of the common bile duct without antecedent history of trauma or surgery to the duct appears to be an exceedingly rare complication of gallbladder disease. A careful review of the literature reveals but five references to spontaneous rupture unassociated with trauma or surgery. We believe our case warrants reporting because of the rarity of the condition.

CASE REPORT

H. K., a white male, age twenty-five, complained of crampy pain in the epigastrium of three weeks' duration, occurring one hour after meals and lasting one to two hours. This pain was relieved at first by taking bicarbonate of soda but one week prior to hospitalization the pain changed in character and became constant and intractable. At this time the patient's complaints consisted of malaise, weakness, headache and several bouts of afternoon chills and fever. The family physician interpreted these findings as consistent with "flu" and after five days of bedrest and symptomatic therapy the patient felt much improved and resumed his daily routine. Two days later the malaise, fever and chills, accompanied by severe non-radiating epigastric pain returned and jaundice was noted. The patient was admitted to the hospital.

His past history disclosed that the patient had experienced a similar episode of pain one year prior to his present illness which was relieved by soda bicarbonate but was unaffected by amphojel. There was no history of trauma save for a war injury of the left kidney sustained in 1944 which necessitated a left nephrectomy in 1946 because of persistent hematuria.

Physical examination revealed a lean, well developed male who appeared acutely ill and in obvious distress. His temperature was 100.2°F., pulse 98, respirations 20. The sclerae and skin were moderately icteric. There was tenderness and some rigidity in the right upper quadrant with subxyphoid tenderness. The liver, spleen, kidney and gallbladder were not palpable. The remainder of the examination was non-contributory.

Laboratory studies on admission showed urine with a trace of albumen, positive for the presence of bile but negative for the presence of urobilinogen; hemoglobin 85 per cent; red blood cells 4.45 million; white blood cells 12,000 with a normal hemogram. Serum amylase and blood chemistry studies were all within normal limits; icterus index, 64.

The patient was admitted to the medical service and the differential diagnosis considered was: (1) Penetrating duodenal ulcer into the liver with secondary hepatitis; (2) infectious hepatitis with an intrahepatic obstructive phase.

Penicillin therapy (40,000 units every three hours) was instituted immediately but despite it the patient's temperature rose to 104°F. on the day following admission. Gastrointestinal x-rays on the second hospital day were negative for ulcer. The jaundice increased and the icterus index rose to 73. The stools became acholic in appearance and were negative for hydrobilirubin. The urine was negative for urobilinogen on repeated examinations. On the second and fifth hospital days the patient had a severe chill despite penicillin therapy followed by a temperature rise to 103°F. On the morning of the sixth hospital day the patient's pain became more severe, the abdomen became more rigid especially in the right upper quadrant and surgical consultation was requested. A urinalysis revealed urobilinogen strongly positive in the urine for the first time. Because of the severe pain, abdominal spasm, pattern of chills and fever, increasing icterus and leukocytosis, a preoperative diagnosis of septic cholangitis was made.

At operation under continuous spinal anesthesia an upper, split, right rectus incision was made. The liver was considerably enlarged. Inspection revealed the gallbladder to be

FIG. 1. Cholangiogram showing filling of hepatic ducts and dye rapidly emptying into the duodenum. Arrow indicates the site of perforation in the common duct.

markedly thickened, shrunken and measuring ¾ by 1 inch. The retroperitoneal space, especially the right perirenal space, was deeply stained with bile. Upon packing off the abdominal contents to expose the common duct a gush of bile was encountered (estimated quantity, 200 cc.). The bile was aspirated and further inspection revealed a markedly thickened common duct. A ragged perforation with necrotic edges, having the appearance of the ostium of an inflamed fallopian tube and measuring 10 mm. in diameter, was encountered on the anterior surface of the middle third of the duct about 2 to 3 cm. below the entrance of the cystic duct. A cholesterol stone measuring 12 by 8 mm. protruded through this rent. A "T" tube was inserted in the common duct through this opening and an omental patch was sutured in place. A cholecystostomy tube was sutured into the shrunken gallbladder and a penrose drain was inserted. It was believed that further exploration or manipulation was unjustifiable in view of the patient's critical condition. The postoperative diagnosis was septic cholangitis with rupture of the common duct due to stone.

The postoperative course was uneventful. The icterus index fell to 42 and the patient was discharged on the fourteenth postoperative day with the "T" tube in place. The cholangiogram done the day prior to discharge is seen in Figure 1 and was interpreted to be within normal limits.

Six weeks postoperatively the "T" tube was removed. There was no icterus; the patient had no complaints.

Perforation of the gallbladder secondary to obstructive cholecystitis or empyema is common; perforations of the duct system

in the presence of inflammation are exceedingly rare. The majority of reported perforations of the duct system in the literature are found associated with trauma or previous surgery. As early as 1912, McWilliams reviewed ninety cases of perforations occurring in the extrahepatic biliary system from all causes and found that 91 per cent occurred in the gallbladder, 4.4 per cent in the common duct, 3.3 per cent in the cystic duct and 1.1 per cent in the hepatic duct. Woodruff A. Smith collected eleven cases and reported one of his own of intrahepatic bile duct rupture with escape of bile from the surface of the liver.

Bailey, Vale and Shapiro, and Newel have each reported a case of spontaneous rupture of the choledochus in which there had been no associated trauma, surgery or impacted stone. Reich has reported the same for the hepatic duct. Newel found no obstruction at any point in the common duct or hepatic ducts to account for rupture. He has explained the perforation on a basis of an acute choledochitis combined with spasm of the sphincter of Oddi resulting in temporary partial obstruction which in turn produced an empyema of the duct and rupture at the weakest point. He has also mentioned Burden's etiologic doctrine and invites the possibility of a small stone arising in the glands and imbedded in the wall of the inflamed duct producing rupture.

The etiologic explanations for common duct rupture may be many. The factors which we believe are called most frequently into play are listed below:

1. *Common duct stones may become impacted* in the duct and produce a pressure necrosis of the wall which, when combined with an inflammatory process, may produce rupture. Walters has pointed out that the epithelial lining of the duct is remarkably resistant to trauma which accounts, perhaps, for the relative infrequency of spontaneous rupture.

Burden has pointed out that the biliary ducts contain numerous glands in their walls, extending almost to the peritoneal coat. Normally, these sacculi contain no bile but contain the mucous secretion of these glands. In a dilated, diseased duct these glands may be the seat of infection and calculus formation may occur. Under unusual circumstances, i.e., cholangitis with increased intraductal pressure, perforation may result.

2. *Infection and Increased Intraductal Pressure.* Newel's explanation has already been cited, namely, that with acute cholangitis and spasm of the sphincter the temporary, partial obstruction may be sufficient to produce empyema of the duct with perforation at the weakest point. Frequently these cases demonstrate a predilection for the site of old choledochostomies as the site of rupture. Wolfson and Levine have reported three cases of spontaneous rupture of the duct following choledochostomy. Newburger has reported nine such cases.

The intraductal pressure increases may be due to spasm, stone or frequently both. Thus the duct distends and rupture occurs at the critical point of distention.

3. *Arterial thrombosis* might account for cases in which the rupture occurs independent of the site of former manipulation and instrumentation.

4. *Direct and indirect trauma* may produce rupture of diseased or even normal bile ducts.

5. *Choledochus cysts,* though rare, may produce spontaneous rupture. In Taube's case a lemon-sized cystic mass seeping bile was found located at the retroduodenal portion of the choledochus.

6. *Diverticula* of the choledochus may be listed as a rare pathologic entity. However, one of us (H. M. G.) has recently operated upon a patient with jaundice whose common duct contained eleven diverticula in each of which a mixed stone was impacted. It seems quite possible that under conditions of increased intraductal pressure and in the presence of inflammation, one or more of these stones may erode a diverticulum and produce a perforation.

COMMENT AND SUMMARY

A case of spontaneous perforation of the common duct associated with stone has been presented. A brief review of the literature and a description of the factors which may lead to such a perforation have followed.

In retrospect, albeit hypothesis, it would appear that during this patient's first attack of pain one year prior to his present illness, a small cholesterol stone was pushed from the gallbladder into the common duct. It remained there as a silent stone until the recent chain of symptoms began. At this time in the presence of septic cholangitis it eroded through the duct wall and after perforation produced the sudden severe pain and chemical peritonitis. With the partial extrusion of the stone from the duct, bile was once again able to gain entrance into the intestinal tract and undergo reduction to urobilinogen which appeared in the urine for the first time on the operative day.

REFERENCES

1. Bailey, H. Emergency Surgery. Vol. 1, p. 103. Bristol, 1930. Wright.
2. Vale, C. F. and Shapiro, H. Non-traumatic perforation of common bile duct. *Am. J. Surg.*, 18: 103, 1932.
3. Taube, H. N. and Himel, H. A. Non-traumatic perforation of common bile duct. *Canad. M. A. J.*, 44: 607, 1941.
4. Newell, E. D. Spontaneous rupture of common bile duct. *Ann. Surg.*, 113: 877–880, 1941.
5. Robson, M. Diseases of Gall Bladder and Bile Ducts. 3rd ed., pp. 335, 410, 455. London. Bailliere.
6. McWilliams, C. A. Acute spontaneous perforation of the biliary system into the free peritoneal cavity. *Ann. Surg.*, 55: 235, 1912.
7. Woodruff, Smith. *Ann. Surg.*, 83: 55–68, 1926.
8. Reich, Nathaniel E. Spontaneous rupture of a normal hepatic duct. *Ann. Surg.*, 116: 137–140, 1942.
9. Burden. *Ann. Surg.*, 82: 584, 1925.
10. Wolfson, W. L. and Levine, D. R. Spontaneous rupture of the common bile duct. *Surg., Gynec. & Obst.*, 60: 747, 1935.
11. Newburger, B. Spontaneous postoperative rupture of bile ducts. *Ann. Surg.*, 107: 558, 1938. Walters, W. and Snell, A. M. Diseases of Gall Bladder and Bile Ducts. Philadelphia, 1940. W. B. Saunders.

CONGENITAL MEGACOLON-HIRSCHSPRUNG'S DISEASE

MEGACOLON TREATED BY SEGMENTAL RESECTION

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HIRSCHSPRUNG'S disease or megacolon was established as a clinical entity in 1888 as "a condition of congenital, high grade dilatation of the colon with thickening of all its tunics, especially the tunica muscularis and retention of large quantities of fecal matter." The acquired type of megacolon although pathologically identical with its congenital relative differs etiologically from the entity described by Hirschsprung.

Any mechanical obstruction of the large bowel is followed by hypertrophy and dilatation above the obstruction, thus considering the early age of appearance of symptoms of the disease it is possible that some embryonal defect is present which cannot be demonstrated at either operation or necropsy.

The fact that the sigmoid is the most common site of the lesion and is usually found enormously enlarged the possibility of redundancy with chronic volvulus due to either kinking, angulation or adhesions must be considered in the etiology of this condition.

Rankin believes that the pathogenesis is mixed, that there are often several etiologic factors as an embryonal defect situated either in the motor mechanism of the bowel itself or may be explained by ectasis of the wall of the bowel, or there is a mechanical, congenital defect which, although not demonstrably obstructive, produces the three cardinal anatomic features of megacolon, namely, dilatation, elongation and hypertrophy. Attempts to demonstrate mechanical obstruction in the congenital cases have failed as have any demonstration of faulty mechanism of resected nerve specimens.

Megacolon is more common in male infants, the incidence being 3:1; approximately a fourth of the cases are seen before the age of five years.

Although the sigmoid is the most usual site of involvement, the process tends to extend proximally so that the descending transverse and ascending colon and finally the cecum may be implicated. In rare cases the lower part of the ileum is involved resulting in a condition of megaileum. Although the lesion usually ends at the junction of the sigmoid and rectum, the rectum is sometimes involved to a minor degree. The dilatation may become enormous so that the pelvic colon resembling a flexed leg and thigh may come to occupy the entire abdomen and cause extreme distention with obliteration of liver dullness and marked umbilical protrusion.

With surgical attack on the colon constituting a dangerous hazard associated with a prohibitive mortality prior to present day adjuvants to colon surgery in the form of sulfasuxidine and penicillin, the treatment was directed toward the etiological factor of neuromuscular obstruction. This condition was placed in the same category as cardiospasm, spasmodic obstruction of the pharynx and other examples of so-called achalasia, a term indicating that the essential defect is an inability of the sphincter to relax rather than a true spasm. The colon and rectum are innervated by a double nerve supply from the autonomic nervous system. The circular muscle fibers are supplied from the lumbar rami communicantes passing down through the sympathetic trunks and the hypogastric and pelvic plexuses. The longitudinal fibers on the other hand are

supplied by the parasympathetics. Hyperactivity of the sympathetic innervation to the pelvirectal junction leads to a condition of increased tone of the sphincter. Thus Wade and Royle, in 1927, were the first to suggest sympathectomy for the treatment of idiopathic megacolon. In 1930, Rankin and Learmonth modified the technic of the operation in which a transperitoneal division of the presacral and inferior mesenteric nerves is accomplished.

Grimson, quoting Finney, Eiss and deTakats and Biggs has summarized the mortality rate associated with the medical management of megacolon as averaging 58 per cent. Although the patients can be controlled for long periods of time, the bowel may perforate during an impaction episode leading to peritonitis and death.

Of all the surgical procedures resection of the involved bowel was the most satisfactory, but prior to the advent of sulfasuxadine in the preoperative preparation of the patient the high mortality associated with resection prevented its uniform acceptance.

Poth has demonstrated that sulfasuxidine and sulfathalidine alter and simplify the bacterial flora of the gastrointestional tract. His first report in 1942 on a series of fifty patients receiving sulfasuxidine both pre- and postoperatively revealed the absence of fecal fistulas and peritonitis and no deaths in the series. After four years evidence has accumulated that sulfasuxidine and sulfathalidine when given in adequate dosage will produce a significant modification of the bacterial flora of the bowel and give a satisfactory mechanical preparation of the bowel preceding surgical operations while the patient is maintained on an adequate protein and carbohydrate diet. Postoperative morbidity studies indicate that these drugs when properly used in the preoperative and postoperative surgical periods will contribute to the lowering of the operative mortality and make an occasional procedure possible which might otherwise not be feasible.

Moses Behrend using sulfasuxidine 0.5 Gm. to a Kg. of body weight for one week has successfully carried out open end-to-end anastomosis of the colon.

Karl A. Meyer et al. used the open anastomosis on a series of twenty patients administering sulfasuxidine for a period of from seven to fourteen days before surgery in doses varying from 12 to 18 Gm. per day. There was one death in this series due to pulmonary embolism, a mortality of 5 per cent

Waugh and Custer in a series of fifty cases using a primary aseptic anastomosis resorted to 10 Gm. of sulfasuxidine daily for four days prior to operation. Their mortality rate for the entire series was 4 per cent.

Poth and Knotts state that the sulfasuxidine given in therapeutic doses alter the feces because they become semifluid and practically odorless. Thus as a result of preparation of the patient with sulfasuxidine, parenteral feeding and a nonresidue diet the colon is practically empty at the time of operation and thus proximal colostomy or cecostomy is unnecessary. The hospital convalescence seldom exceeds three weeks comparing favorably with the minimum of eight weeks' close supervision and three or four separate procedures involved in the Mikulicz procedure.

Cattell and Colcock, from the Lahey Clinic, in summarizing their experience with congenital megacolon state that "Congenital megacolon is rare. Six patients have been operated upon at the Lahey Clinic from 1940 to 1945 inclusive and are reported. The operation of choice is segmental or subtotal colectomy. Lumbar sympathectomy as the only operative procedure offers little chance of permanent relief and if employed should be reserved for the milder cases with diffuse dilatation. Medical treatment should suffice for these cases without operative intervention. Lumbar sympathectomy may be combined with segmental resection but should not accompany subtotal colectomy."

CASE REPORT

R. F., Case No. 1515, male, age three years, referred to my service by Dr. H. Loikrec on January 5, 1946, with a chief complaint of "constipation." He was well up to the age of six months when he began having trouble evacuating his bowels. Constipation varied from one week to six months, the length of the latest episode, the use of laxatives and enemas being of no value. Along with constipation there was nausea and vomiting occurring with severe abdominal pain and marked abdominal distention. About four months ago the mother noticed a mass in the child's abdomen varying in size after enemas or vomiting, the enemas never resulting in formed stool and yielding only discolored fluid. The past medical history was otherwise negative.

Physical examination revealed a well nourished male child. The tonsils were hypertrophic, dentition good and some palpable nodes present in both post-cervical chains. The heart and lungs were essentially negative. The abdomen revealed moderate distention and a slight umbillical hernia. Palpation revealed a rounded, hard, firm mass extending to the umbilicus. Rectal examination disclosed a greatly dilated rectum with a massive fecal impaction which on bimanual examination seemed to be the source of the large abdominal "tumor."

On January 6, 1946, under vinethene anesthesia the impaction was broken up and a barium enema administered under fluoroscopic control, the enema visualizing a large dilated sigmoid flexure. Unfortunately due to hyperirritability of the colon, after breaking up the impaction, the barium was not retained long enough to be recorded on a film, only a faint residue of barium visualizing the upper portion of the sigmoid. Three days later the retained barium visualized the lower portion of the descending colon and rectum and a composite photograph of the superimposed *x*-ray films revealed the extent of the dilated bowel suggesting megacolon.

Other laboratory data were as follows: On January 14th the urine was clear, straw colored; specific gravity 1016, reaction acid, sugar negative, albumen very faint trace, blood negative, microscopical examination negative. Two days later erythrocytes numbered 4,170,000, leukocytes 5,000, hemoglobin 80 per cent, polymorphonuclears neutrophiles 51 per cent, eosinophiles 1 per cent, small lymphocytes 5 per cent, medium lymphocytes 34 per cent, large lymphocytes 6 per cent, large mononuclears 3 per cent. Kolmer and Kahn tests were negative.

On January 13, 1946, he was placed on a preoperative routine consisting of sulfasuxidine 1 Gm. four times daily, ½ ounce of mineral oil at bedtime and a daily colonic irrigation with normal saline solution. A daily liquid evacuation resulted from this routine. Donors were obtained by proper crossmatching and held in abeyance for the day of operation. Caster oil, ½ ounce was given forty-eight hours before operation and the enema omitted the day before operation.

On January 19th, he was operated upon using ether vapor and oxygen for anesthesia and a continuous drip of blood through a cannula inserted into the internal saphenous vein at the left ankle joint. Through a lower midline incision the dilated sigmoid was resected from its junction with normal sigmoid down to the rectosigmoid junction. An open end-to-end anastomosis was carried out in two layers using No. 00 chromic interrupted sutures for the inner layer and interrupted No. 35 stainless steel wire for the outer layer. There was no fecal matter visible during the anastomosis. The posterior peritoneum in front of the bifurcation of the aorta was opened and a dissection of all fat and areolar tissue carried out to sever the presacral nerve; 2½ Gm. of sulfanilamide powder was sprinkled over the anastomotic suture line and the abdomen closed by a continuous No. 00 chromic suture doubled for the peritoneum and interrupted black silk sutures approximating the skin, subcutaneous tissue and fascia as a single layer.

The total operating time was sixty-five minutes with the patient's condition very good on leaving the table. A total of 500 cc. of citrated blood was administered during the operation and in the immediate postoperative period.

Penicillin was started immediately postoperatively in 10,000 units intramuscularly every third hour and increased to 30,000 units on January 21st, continuing until January 26th, when it was discontinued. Fluids were administered by vein through the cannula until January 21st, when water was started by mouth and sulfasuxidine again started giving 1 Gm. every four hours and continued until January 24th

FIG. 1. Composite x-ray picture after barium expulsion showing degree of involvement.

The temperature reached normal on the sixth postoperative day and liquid bowel movements were passed as soon as sulfasuxidine was started postoperatively. The patient left the hospital on the thirteenth postoperative day in good condition.

A complete blood count on January 25th, revealed erythrocytes 4,370,000, leukocytes 10,450, hemoglobin 80 per cent, polymorphonuclears neutrophiles 61 per cent, eosinophiles 3 per cent, basophiles 6 per cent, small lymphocytes 25 per cent, medium lymphocytes 3 per cent, and large lymphocytes 2 per cent.

A summary of the pathological report is as follows: Macroscopic: "The specimen consisted of large intestine measuring 20 cm. in length. At one end it measured 2.8 cm. in diameter and at the opposite end 4.9 cm. The portion of smaller caliber comprised two-thirds of the specimen and had prominent teniae and small sacculations which appeared normal. The dilated portion while it had a thickened wall had no teniae or sacculations."

Microscopic: "Sections of large intestine were lined by a typical mucosa which was somewhat more deeply stained and basophilic than usual. The muscularis was very well developed and appeared to be three or four times the usual thickness. The individual smooth muscle fibers were large and even with a simple H. & E. stain it was evident that the myoglia fibrils were very large and promi-

nent. No inflammatory cell infiltration was seen. In the submucosa there was an occasional small germinal lymph follicle." Diagnosis: Congenital megacolon. (Hirschsprung's Disease) hypertrophy of colon.

A follow-up examination July 8, 1946, revealed a well nourished healthy youngster having no abnormal symptoms or complaints and normal stool evacuations without need of laxatives or enemas.

SUMMARY

In considering the treatment of megacolon it may be stated that with preoperative preparation of the large bowel with sulfasuxidine it is possible to perform primary anastomosis on a practically empty colon and devoid of fear of postoperative peritonitis and intestinal fistula. The general condition of the patient is enhanced by the free use of blood transfusions and postoperative penicillin which has an inhibitory effect on anerobic streptococci and clostridial infections and the prevention of their causitive rôle in postoperative peritonitis. Thus this negligible surgical mortality will stimulate the more frequent use of surgery in the treatment of congenital megacolon replacing protracted medical treatment and its final high mortality rate as well as the operation of sympathectomy which besides its frequent failure sometimes by interrupting visceral sensory pathways fails to warn the patient of impaction or impending perforation.

REFERENCES

Behrend, Moses. Succinylsulfathiazole (sulfasuxidine) and the elimination of the Mikulicz operation. *S. Clin. North America*, Chicago Number 1944, pp. 238–247, 1944.

Waugh, John M. and Custer, Nanford D., Jr. Segmental resection of lesions occurring in the left half of the colon with primary end-to-end aseptic anastomosis. Report based on fifty cases. *Surg., Gynec. & Obst.*, 81: 593–598, 1945.

Poth, Edgar J., Ross, Charles A. and Fernandez, E. Bravo. An experimental evaluation of sulfasuxidine and sulfathalidine in surgery of the colon. *Surgery*, 18: 529–533.

Poth, Edgar. Succinylsulfathiazole and phthalylsulfathiazole in surgery of the colon. *Surgery*, 17: 773–779, 1945.

Grimpson, K. S., Vandergrift, H. N. and Dratz, H. N. Surgery in obstinate megacolon, radical one-stage resection and ileosigmoidotomy. *Surg., Gynec. & Obst.*, 80: 164–173, 1945.

Meyer, Karl A., Sheridan, Alfred and Kozoll, Donald D. One-stage "open" resection of lesions of the left colon without complementary colostomy. *Surg., Gynec. & Obst.*, 81: 507–514, 1945.

Penick, Rawley M., Jr. Problems in surgical treatment of congenital megacolon. *J. A. M. A.*, 128: 423–426, 1945.

Cattell, Richard B. and Colcock, Bentley P. Congenital megacolon. *S. Clin. North America*, Lahey Clinic Number, pp. 644–655, 1946.

Henderson, John. A summary of the surgical aspects of certain sulfonamides and antibiotic agents. *Internat. Abstr. Surg.*, 83: 1–12, 1946.

SUBMUCOUS LIPOFIBROMA OF THE ILEUM

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BENIGN tumors of the small intestine are rarely found and are still less frequently diagnosed clinically. It is likely that their frequency is greater than is found at operation for many are discovered as incidental findings at autopsy. Kirshbaum,[1] in 1935, reported nine cases of lipoma of the gastrointestinal tract discovered at autopsy, six of which were located in the small intestine. Two of these were associated with clinical symptoms. In his analysis of thirty-three benign tumors encountered in 5,754 autopsies, twelve were in the small intestine. Schottenfeld,[2] in 1943, reviewed the literature and presented six new cases of lipoma of the small intestine. In his review he pointed out that of forty-six gastrointestinal tract lipomas discovered in a total of 38,741 autopsies sixteen were in the small bowel.

Benign tumors of the small intestine may affect all parts of the jejunum and ileum; however, they are most frequently found in the ileum (Kirshbaum, Maingot,[3] Lichtenstein and Dutra[4]). Schottenfeld, in his review of 275 gastrointestinal tract lipomas, stated that 56.0 per cent were in the small bowel, 52.0 per cent of which were in the ileum. The commonest types of benign small bowel tumors in order of their frequency are adenoma, myoma, fibromyoma, lipoma and hemangioma.[5] Rarer types are the lymphangioma, angiofibroma,[4] myxofibroma[6] and neurofibroma.

The tumors may be submucous or subserous, sessile or polypoid. Their symptoms vary with their origin. Generally the subserous types growing in an extraluminal direction present no symptoms. The submucous types may be symptomatic. These may cause melena, intussusception, partial or complete obstruction of the bowel and necrosis of the tumor mass.

These findings are usually the complications of the polypoid type of lesion rather than the sessile type.

Clinically the patient may present a picture of acute or chronic attacks of intestinal obstruction associated with moderate to marked abdominal distention, nausea, vomiting and weight loss. Blood may be found in the stool. Christopher,[7] in 1942, reported a case of hemangioma of the ileum in which recurrent melena was a prominent finding. Smith, Good and Gray,[8] in 1944, reported two cases of tumor of the small bowel that was responsible for intermittent episodes of melena over a period of three and seven years, the former a malignancy and the latter a benign lesion.

Diagnosis may be made by a history of the tendency toward recurrence of symptoms, mainly constipation, abdominal distention, melena, nausea, vomiting and weight loss.

CASE REPORT

A Mexican male, aged forty-seven years was admitted to a medical service of the Cook County Hospital on December 10, 1945 with the diagnosis of "cirrhosis of the liver." He presented the following complaints: weakness, progressive fatigue, intermittent, recurrent attacks of vomiting, a weight loss of 30 pounds, occasional tarry stools and abdominal swelling of three months' duration. There was no previous operation.

Physical examination on that date revealed a weakened, middle-aged Mexican male, show-

ing evidence of recent weight loss but no distress. The temperature was 98.2°F., the pulse 70, respiration 20 and the blood pressure 100 systolic and 60 diastolic. The skin was wrinkled. The pupils were small and unequal and did not react to light. The heart was slightly enlarged to the left but no murmurs were heard.

The abdomen was slightly distended and there was little tenderness in the right upper quadrant. No masses were palpated. The kneejerk reflexes were absent. A tentative diagnosis of cerebrospinal lues and gastrointestinal tract malignancy was made.

The red blood cell count was 4,700,000 and the white blood cell count 9,250 with 76 per cent polymorphonuclear leukocytes, 21 per cent lymphocytes and 3 per cent monocytes. The hemoglobin was 92 per cent. The urine was acid, negative for sugar, albumin or cellular elements. The blood Wassermann was negative. The blood non-protein nitrogen was 29 mg. per hundred cc. The inorganic phosphorous was 2.7 mg., the alkaline phosphatase 4.3 units (Bodansky) and the acid phosphatase 0.7 units per hundred cc.

X-ray examination of the chest revealed a boot-shaped heart. A scout film of the abdomen showed gaseous distention in the small bowel with early laddering effect. A barium enema on December 19th was negative. A roentgenological diagnosis of "small bowel obstruction" was made.

The patient continued to have daily bowel movements and was comfortable until December 30th when he developed abdominal cramps, became markedly distended and vomited several times. Visible peristaltic waves were noted concomitant with the cramps. Auscultation revealed rushes, tinkling and borborygmi. The patient was transferred to surgery.

On December 31st under spinal anesthesia the patient was explored. The peritoneal cavity contained a moderate amount of clear serous fluid. The small bowel was markedly distended. About two feet proximal to the ileocecal junction an ileoileal intussusception was found. When this was reduced a mass was noted in the lumen of the bowel which was distended proximal to the mass. The mass and approximately 25 cm. of the ileum were resected and an end-to-end anastomosis performed.

The patient had an uneventful recovery and was discharged from the hospital fifteen days following the operation.

Fig. 1. Gross tumor; pedunculated lipofibroma of the ileum.

The pathological report was as follows: the specimen consisted of a segment of small intestine measuring 25 cm. in length. The serosa was thickened and in places covered by fibrous tags. This was especially marked in the midportion of the bowel segment. The serosa was slightly injected and purplish-pink. The midportion of the resected bowel was deformed by

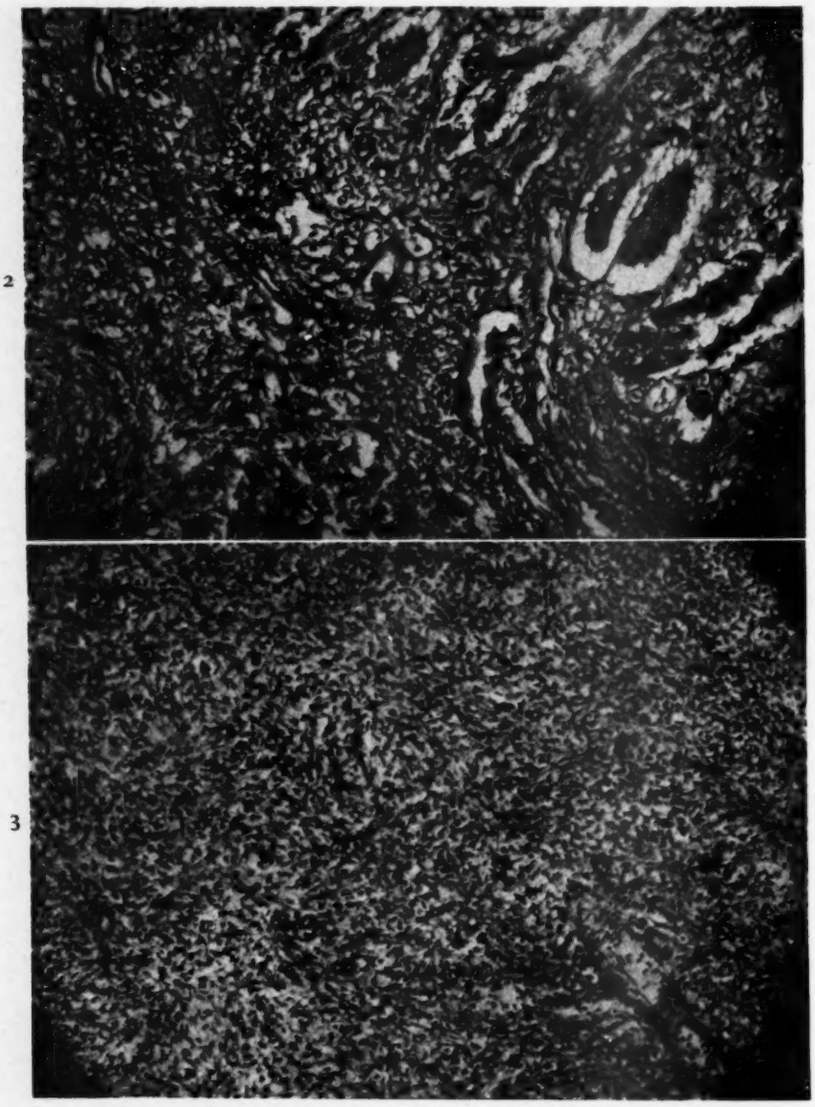

FIG. 2. Note proliferation of mature and immature fat cells in the lamina propria and submucosa; hematoxylin and eosin stain; × 172.
FIG. 3. Note interlacing bundles of cellular fibrous connective tissue and scattered fat cells; hematoxylin and eosin stain; × 172.

an oval shaped mass measuring 5.0 by 5.0 by 4.0 cm. which appeared to be freely moveable within the lumen.

On opening the bowel a pedunculated mass was exposed, 5.0 by 4.0 by 4.0 cm., which was attached to the mucous membrane along the lateral aspect of the wall by a pedicle 1.5 cm. long and 1.2 cm. in diameter. The mass was covered by a light tan mucous membrane. Beneath the mucous membrane were small plaques measuring up to 12 mm. which were light yellow-grey and surrounded by a reddish-grey, hemorrhagic extravasation up to 1 cm. in diameter. The remaining portion of this pedunculated mass on sectioning was a homogeneous pale grey-white. The mucous membrane in the proximal portion of the mass was congested, purplish-red to pale purplish-grey and covered by thick mucus. The distal portion was pale purplish-grey.

The circumference of the lumen of the bowel for a distance of 3.0 cm. proximal to the mass was 4.0 c.

Proximal to this region the circumference measured 9.5 cm. Distal to the mass the lumen was 6.5 cm. in circumference.

Microscopically a section of the mass revealed large accumulations of fat cells both in

the lamina propria and in the area of the submucosa. (Fig. 2.) The cells for the most part were fat cells, characterized by the marginal placement of the nucleus along the cytoplasmic membrane and a large vacuole occupied by fat in the cytoplasm. Mixed with the mature fat cells were some less mature ones as characterized by the centrally placed nuclei and finely vacuolated cytoplasm. In the region of the muscularis propria the fat cells were less numerous, the original tissue having been replaced by interlacing bundles of cellular fibrous connective tissue. (Fig. 3.) The diagnosis was submucous lipofibroma of the small intestine.

COMMENTS

The above case presented several clinical features that should have suggested its diagnosis. The history of weight loss, recurrent attacks of vomiting, occasional episodes of tarry stools and intermittent abdominal swelling was strongly suggestive of a benign, obstructive lesion. Malignancies as a rule are progressively rather than intermittently obstructive. The chronicity of the intussusception was apparent by the evidence of multiple fibrous tags. Although recurrent melena has been usually attributed to necrosis of the tumor proper, it is to be noted that no evidence of such necrosis was present in this patient. Very likely the intermittent occurrence of melena can be explained by the chronicity and no doubt recurrent acute attacks of intussusception, the last attack necessitating surgical intervention.

SUMMARY

A case of submucous lipofibroma of the ileum associated with intussusception was reported. The history, symptomatology and physical findings were typical of those found in similar cases. The patient recovered after surgical resection of the involved bowel and an end-to-end anastomosis.

REFERENCES

1. Kirshbaum, J. D. Submucous lipomas of the intestinal tract, as a cause of intestinal obstruction. *Ann. Surg.*, 734–739, 1935.
2. Schottenfeld, L. E. Lipomas of the gastrointestinal tract, with special reference to the small intestine including the ileum. Review of the literature and report of six cases. *Surgery*, 14: 47–72, 1943.
3. Maingot, R. Abdominal Operations. Vol. 2. Pp. 1,062. New York, 1940. D. Appleton-Century Co.
4. Lichtenstein, M. E. and Dutra, F. R. Angiofibroma of the ileum. Clinical picture in tumors of the small intestine. *Arch. Surg.*, 47: 69–75, 1943.
5. White, R. J. Hemangioma of the terminal ileum with recurrent hemorrhage from the rectum. *South. Surgeon*, 10: 886–890, 1941.
6. Perry, C. L. and Peters, J. S. Myxofibroma of the ileum. *Bull. Jackson Mem. Hosp.*, 3: 17–20, 1941.
7. Christopher, F. Hemangioma of the ileum. *Ann. Surg.*, 116: 945–947, 1942.
8. Smith, L. A., Good, C. A. and Gray, H. K. Tumor of the small intestine as the cause of recurrent melena. Report of two cases. *Proc. Staff Meet., Mayo Clin.*, 19: 117–122, 1944.

FOREIGN BODY PERFORATION OF THE SIGMOID SIMULATING CARCINOMA*

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IN 1941, MacManus[1] collected ninety-three cases of foreign body perforation of the intestines from the literature and added two of his own. He found three main types of foreign bodies: (1) The metallic type including pins, wires and screws, was most common (46 per cent), (2) bones were encountered nearly as often while (3) wood splinters, including toothpicks, made up only 9 per cent of these cases.

According to Carp,[2] who reviewed all the cases of this nature admitted to the New York Presbyterian Hospital from 1915 to 1926, the great majority (83 per cent) of ingested foreign bodies are passed through the body harmlessly. A small proportion (17 per cent) become lodged and result in perforation; these figures suggest that innumerable cases never reach the hospital.

The clinical picture in these collected cases of intestinal perforation falls into two main types: usually the symptoms are fairly acute, the duration ranging from a few hours to two weeks. In one-third of the cases, however, the symptoms and signs develop gradually and are characterized by low grade fever and anorexia. In the case of radiolucent bodies, the preoperative diagnosis is usually impossible especially since the ingestion of the foreign body is rarely remembered. Only one case in MacManus's entire group of ninety-five had any knowledge of the ingestion of the foreign body.

The gross pathologic findings fit into five main groups.[1] In order of their frequency these are: (1) abscesses, forty-two; (2) generalized peritonitis, eighteen; (3) early localized peritonitis, seventeen; (4) indurated inflammatory tumors, fourteen and (5) hemorrhage, one. Perforation of the appendix occurred in thirty-four of these patients while sigmoid perforation occurred in only five. In sixty cases reported since 1900, there was a 10 per cent mortality.

The case we report of perforation of the sigmoid by a toothpick is of particular interest because of the chronic clinical course, the roentgenogram which simulated carcinoma and the peculiar gross pathologic condition of the lesion.

CASE REPORT

A fifty-six year old housewife was admitted to the Beth Israel Hospital on November 24, 1946, with the chief complaint of abdominal pain and constipation of ten weeks' duration. Ten weeks previously, she was seen at her home complaining of mild, "cramp-like" lower abdominal pain associated with nausea and chilly sensations. She related the onset of her symptoms, then of twenty-four hours' duration, to a meal of fish eaten two days before. She had no bowel movement for twenty-four hours. Examination revealed slight tenderness to the left and below the umbilicus, no associated spasm and a temperature of 99.2°F. A presumptive diagnosis of acute diverticulitis was made. Three days later, September 18, 1946, because of the persistence of her symptoms, she entered a local hospital.

Her laboratory findings on admission were: white blood cells, 13,500; polymorphonuclears, 85 per cent; red blood cells, 3,800,000; hemoglobin, 75 per cent and urine, normal. A barium enema showed a constant area of narrowing at the junction of the sigmoid and the descending colon which was not characteristic of carcinoma; the mucous membrane appeared intact. The patient was treated for threatened peritonitis and was maintained on intravenous fluids and given a course of sulfasuxidine. Her temperature ranged between 98.8° and 99.8°F. She was discharged after one week, apparently well, on a vitamin supplemented low residue diet. When seen two weeks later, she continued to complain of gaseousness and "pencil shaped

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Fig. 1. Roentgenogram showing area of narrowing at junction of descending colon and sigmoid.

stools." Sigmoidoscopy showed considerable mucus in the sigmoid but no blood; the stenosis was beyond the area visualized. No further medical attention was sought until 5 A.M., October 20th when her temperature rose to 105°F. after a shaking chill. Pain developed in the left lower quadrant radiating down the left leg; vomiting was continuous. The patient was readmitted to a local hospital with a diagnosis of "Sigmoiditis, with retroperitoneal perforation." Examination revealed tenderness over the sigmoid. There was a tender bulge in the left vault upon pelvic examination. The white blood count was 37,000. Penicillin and streptomycin were given simultaneously with prompt subsidence of leukocytosis, fever and pain. On the third hospital day, daily rectal irrigations containing sulfasuxidine were begun to relieve the obstipation. She was discharged on her fifteenth hospital day after four days of a normal temperature and no medication. At home the lower abdominal pain and constipation recurred and, three weeks later, she was hospitalized at the Beth Israel Hospital.

The physical examination disclosed a short, obese patient in no distress. There was mild tenderness over the sigmoid and tenderness and fullness in the left pelvic vault. The temperature, pulse and respirations were normal.

The admission laboratory data revealed a negative urine; white blood cells, 6,850; red blood cells, 3.5 million; hemoglobin, 75 per cent and stools, guaiac negative.

During the clinical course the previous x-rays were reviewed; and a repeated barium enema revealed "an area of narrowing in the sigmoid about 3 cm. long. The findings were those of an organic lesion in the mid-sigmoid, slightly stenotic. Some features of the lesion were suggestive of an inflammatory nature. However, carcinoma could not be definitely ruled out." The patient was seen by two consultants, a gastroenterologist and a surgeon; both agreed that malignancy seemed the most likely diagnosis. The large bowel was prepared for surgery and on the eleventh hospital day laparotomy was performed under continuous spinal anesthesia.

A left rectus splitting incision was made extending from the symphysis to 1 inch above the umbilicus. Exploration of the upper abdomen revealed no abnormalities. The sigmoid

lay deep in the pelvis where it was fixed to the posterior uterine wall and board ligament by a hard mass which felt like carcinoma. A loop of distal sigmoid was felt beneath the mass and, because of the possibility of palliative resection, a plane of cleavage was developed by blunt dissection between uterus and involved bowel. A few drops of purulent material were encountered. The bowel, which was adherent over an area 8 by 4 cm. to the uterus and left ovary, was separated with relative ease and revealed an unusual orange-yellow coating to the "abscess cavity" and adjacent bowel wall. A portion of this was taken for frozen section and reported as showing "chronic inflammation." A corpus luteum cyst 3 by 2 cm. lay in the upper portion of the mass. As the cyst was being separated from the sigmoid a small communication between it and the bowel wall was uncovered and a 3 cm. piece of toothpick extruded itself. After mobilization of the bowel the lesion was found to involve the junction of the descending colon and sigmoid. A large redundant loop of sigmoid had been trapped beneath the lesion in the pelvis. An additional biopsy taken from the hard yellow material at the mesenteric border of the bowel, away from the ovary, confirmed the first report. A left salpingo-oophorectomy was performed. The tiny (0.2 cm.) sigmoid perforation was closed. Two Gm. of sulfanilamide powder were sprinkled in the pelvis and over the bowel. The omentum was then tacked down with interrupted sutures over the long denuded area on the bowel and several appendices epiploica were used to peritonealize the posterior surface of the uterus. The abdominal wall was closed in layers without drainage. The patient left the operating room in good condition.

The pathological examination revealed that the specimen consisted of a resected left tube and ovary. The ovary measured 3.0 by 2.8 by 2.3 cm. while the tube measured 3.5 cm. in length and 0.6 cm. in diameter at the ampulla. The external surface of the specimen was covered by congested and somewhat roughened peritoneum except at the upper pole of the ovary where a cystic cavity opened to the outside. This cavity measured 3.0 cm. in diameter; its inner surface was yellowish-gray in color and covered to a great extent by reddened and necrotice material. The wall of this cystic structure was relatively thick, measuring 0.35 cm. in average thickness. Beneath this cyst definite ovarian tissue could be recognized containing a few tiny corpora lutea. The fimbriated end of the tube was patent, yet swollen and congested. Also submitted was a thin sliver of wood resembling a portion of toothpick which measured 2.8 cm. in length. This body had been removed from the cyst of the ovary. There were a few small, irregular fragments of reddened and light yellowish-tan, friable tissue measuring 0.6 cm. in diameter. Frozen section showed inflammatory tissue with foreign body giant cells surrounding double refractile bodies.

Diagnosis: Chronic oophoritis with necrosis, cystic and xanthomatous degeneration; perioophoritis and perisalpingitis; perisigmoiditis; foreign body(wood sliver) and hydrosalpinx.

The patient's postoperative course was uneventful. She was given penicillin and streptomycin. Her temperature rose to 101°F. on the second postoperative day but fell within three days and remained at 99°F. throughout her stay. This slight elevation was attributed to residual pelvic inflammation. Antibiotics were withdrawn after one week. She was discharged on the eleventh postoperative day (December 14, 1946) with her wound well healed. Three days after discharge, she again began to complain of abdominal cramps and fever. She was readmitted December 24, 1946, with a temperature of 100°F., a white cell count of 16,000 and a diagnosis of "pelvic abscess." Massive doses of penicillin made drainage unnecessary. She was discharged January 16, 1947, after one week of normal temperature without chemotherapy and has remained well ever since.

SUMMARY

A case history is presented of a patient in whom a swallowed fragment of toothpick perforated the sigmoid and entered a corpus luteum cyst of the left ovary. The prolonged symptomatology, anemia and x-ray evidence of an obstructive lesion led to a preoperative diagnosis of carcinoma of the sigmoid. At operation the perforated bowel and ovarian cyst were found involved in a hard yellow mass. Tissue from the mass revealed a unique reaction due to the response of the lutein cells to chronic irritation.

REFERENCES

1. MacManus, J. E. Perforations of the intestine by ingested foreign bodies. *Am. J. Surg.*, 53: 393, 1941.
2. Carp, Louis. Foreign bodies in the intestine. *Ann. Surg.*, 85: 575, 1927.

ENDOMETRIOSIS OF THE UMBILICUS*

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THIS paper is written for the purpose of adding two cases of endometriosis of the umbilicus to this relatively rare entity and also to review some of the literature on this subject.

Novak[1] states that about forty cases of endometriosis of the umbilicus have been reported. However, according to Berman,[2] Stranger found a total of sixty-eight cases reported in the entire world until the end of 1935.

Since 1935, we found that in American literature Jenkins and Brown[3] reported only three cases of endometriosis of the umbilicus out of a total of 117 cases of endometriosis elsewhere in the body. Fallon, Brosman and Moran[4] reported 200 cases of endometriosis in a recent article but failed to mention any cases involving the umbilicus.

Green[5] in 1899 was among the first to describe a case whose history and physical findings were very suggestive of endometriosis of the umbilicus and Cullen[6] in 1920 reported two cases. Samson[7] in his very thorough and interesting article discusses endometriosis or adenoma of the peritoneal cavity but makes no mention of endometriosis elsewhere in the body.

Histogenesis There are a number of theories concerning the histogenesis of endometriosis of the umbilicus. We are in agreement with Meyer, Novak and others that the Sampson theory of regurgitation of endometrial particles through a tube does not explain endometriosis of the umbilicus because, as previously mentioned, Sampson did not take into consideration endometriosis outside of the peritoneal cavity.

We found in our cases, as did Berman[2] and others, that no communication existed between the peritoneal cavity and the umbilicus and there were no signs of endometriosis elsewhere. Therefore, the celomic metaplasia thoery seems to be the most logical explanation for the subject on hand. This theory, by Ivanoff and Meyer, is based on the fact that the entire epithelial apparatus of the female genital tract is derived from the primitive peritoneum which forms the epithelial lining of the celomic cavity. The müllerian duct is developed from the invagination of this celomic epithelium and remnants of this remains at the umbilicus and undergo endometrial differentiation.

Bingham and Templeton[8] state that while endometriosis is not malignant, these growths have been known to recur and metastasize. Visible endometrium has been found in the pelvic lymph nodes on numerous occasions and, according to Berman, cases of endometriosis of the arm and thigh have been reported.

CASE REPORTS

CASE 1. R. M., (No. 113538), a thirty year old colored female, was admitted to the Surgical Service of Harlem Hospital on January 29, 1939, with a history of umbilical "tumor" of one year's duration. It was painful and bled intermittently for a month prior to admission. There was no periodicity to the pain. The past history revealed that the patient had had a hysterectomy for fibroid uterus followed by amenorrhea three years prior to admission.

The physical examination revealed a well developed and well nourished colored female in no acute distess. Her head and neck showed no gross abnormality. The lungs were clear and the heart was essentially negative. The abdomen was scaphoid and there was a well healed lower mid-abdomenal scar present. There were no palpable masses. The umbilicus

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FIG. 1. Showing skin, appendages within the superficial portion of cutis and nests of endometrial glands in the deeper portions.

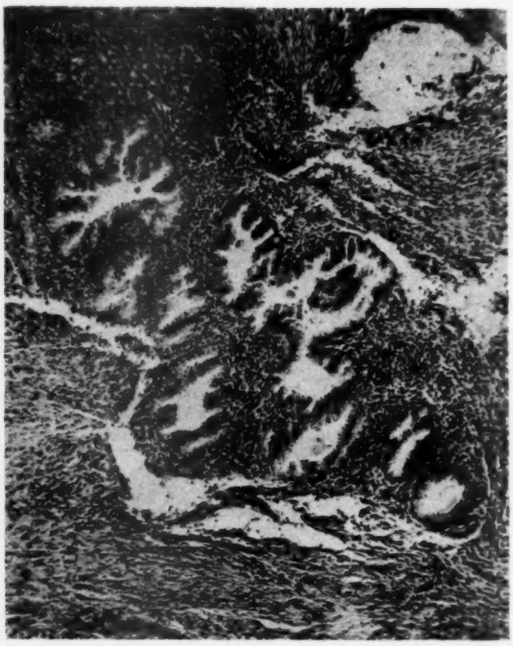

FIG. 2. Presents a higher magnification of Figure 1, showing endometrial glands in secretory phase surrounded by endometrial stroma.

showed a bluish discoloration with tumor formation in the center, tender and cystic in character. The admitting diagnosis was (1) umbilical tumor and (2) possible hemangioma.

At operation on January 20, 1939, an umbilectomy was performed. A discoloration was found to extend to the peritoneum; however, no intraperitoneal involvement was present.

The postoperative course was uneventful except for several episodes of stuporous and semi-stuporous states due to hysteria. The patient was discharged on the eighteenth postoperative day in excellent condition.

The pathologic report is as follows: Gross: The specimen consisted of skin and subcutaneous tissue in the center of which the umbilicus was found. The skin measured 11 by 4 cm. The umbilicus had a raised, light purplish mass in its center. On cut section, the mass was seen to consist of fibrous tissue. Microscopically, sections of the tumor revelaed endometriosis of the umbilicus.

CASE II. G. R., (No. 239484), a thirty-four year old colored female, was admitted to the Surgical Service of Harlem Hospital on November 9, 1945, complaining of painful swelling of the umbilicus of two years' duration. The pain was most severe during her menstrual periods and became progressively worse. The periods were regular, every twenty-eight days and lasting for four days, with no dysmenorrhea or menorrhagic. There was no history of external bleeding. The patient had one child and no miscarriages.

The physical examination revealed a well developed and well nourished colored female in no acute distress. The head and neck showed no gross abnormalities. The lungs were clear and the heart was essentially normal. The abdomen was obese and non-tender. The umbilicus was enlarged, tender, with a small area of ulceration in the center. There was no gross evidence of bleeding. The pelvic examination was essentially negative.

The admitting diagnosis was (1) endometriosis of the umbilicus and (2) omphalitis. Five days after admission, the pain in the umbilicus became severe and the umbilicus showed a small clot in the center.

On November 27, 1945, fourteen days after admission, an umbilectomy and incidental appendectomy were performed. The essential findings at the operation were as follows: The umbilicus showed ulceration with blood clot in the center and purplish discoloration extending to the periteoneal surface. However, the peritoneal cavity revealed no endometrial implants. The uterus was two to three times the normal size and boggy (premenstual).

The postoperative course was uneventful and the patient was discharged, symptom-free, on the thirteenth postoperative day.

The pathologic findings were as follows: Gross: The specimen consisted of a mass of tissue 6 by 3 by 2 cm. in the center of which was an ulceration with a purplish discoloration. The microspic section revealed endometiosis of the umbilicus.

Comment. These two patients were admitted to the surgical wards of this hospital instead of to the gynecclogic wards without the correct diagnosis being made. It seems worth while, therefore, to call the attention of the surgeons, who do not do gynecologic work, to this simple but unusual condition. In one instance it was mistaken for a tumor; in the second instance it was mistaken for omphalitis.

Endometriosis of the umbilicus has never been reported in patients under the age of puberty and past the menopause. It is most prevalent in the third and fourth decades of life. Diagnosis of endometriosis of the umbilicus can usually be made without difficulty based on a history of painful swelling of the umbilicus most severe during, before, and/or after the menstrual period. Frequently, vicarious menstruation from the umbilicus is elicited. The most prevalent physical findings are a swollen, tender mass in the umbilicus with discoloration (purplish or bluish) and occasionally the presence of blood or a clot in the center.

Treatment consists of excision of the umbilicus. However, for cosmetic affect, and for no other reason, sterilization is indicated. We believe that this procedure would then cause a recession of the signs and symptoms as it does in endometriosis of the peritoneal cavity.

SUMMARY

1. Endometriosis of the umbilicus is a relatively rare entity, sixty-eight cases being reported until the end of 1935.

2. Review of some of the literature is presented.

3. Histogenesis of endometriosis of the umbilicus is discussed.

4. Two cases are presented with a description of surgical and pathologic findings.

5. It is important for surgeons to keep this condition in mind.

6. The characteristic history and physical findings are given.

7. Treatment is suggested.

REFERENCES

1. Novak, E. Gynecological and Obstetrical Pathology. Philadelphia, 1940. W. B. Saunders.
2. Burman, W. B. Endometriosis of the umbilicus. *Am. J. Obst. & Gynec.*
3. Jenkins, E. and Brown, W. H. Endometriosis. *J. A. M. A.*, June 5, 1943.
4. Fallon, J., Brosman, J. T. and Moran, Wm. G. Endometriosis. *New England J. Med.*, 239: 669–674, 1946.
5. Green, C. G. A case of umbilical papilloma. *Tr. Path. Soc. London*, 1: 24, 1899.
6. Cullen, T. S. The distribution of adenomyomas containing uterine mucosa. *Arch. Surg.*, 1: 215–283, 1920.
7. Sampson, J. A. Perforating hemorrhagic (chocolate) cyst of the ovary. *Arch. Surg.*, 3: 245–324, 1921.
8. Bingham, E. B. and Templeton, W. K. Umbilical endometrioma. *California & West. Med.*, 41: 330, 1934.

CONGENITAL DIAPHRAGMATIC HERNIA IN THE NEWBORN WITH MEDIASTINAL DEFECT

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THE following case presented an unusual congenital mediastinal defect associated with a posterolateral defect of the left diaphragm. Early operation produced a satisfactory outcome.

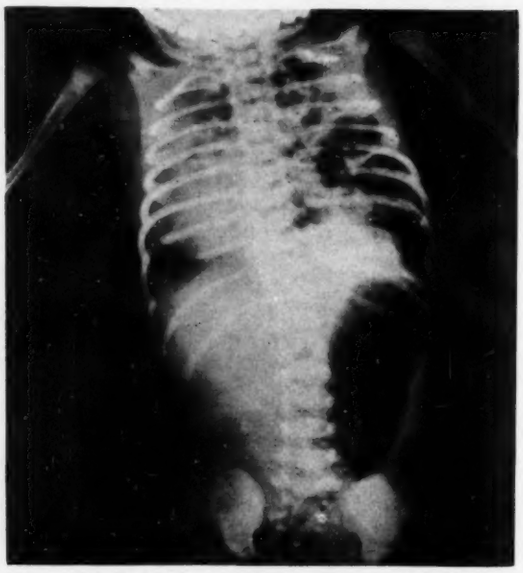

FIG. 1. X-ray showing absence of gas in abdomen, except descending colon, with intestinal pattern in left chest and superior portion of right chest and mediastinal displacement to right.

CASE REPORT

A baby girl, M. B., was born at 11:30 P.M. on March 13, 1946, at the Methodist Hospital, Brooklyn, New York. The antepartum course and delivery were normal. The delivery was not spontaneous, the first and second stage of labor lasting six and one-half hours. The baby was a healthy infant, weighing 6 pounds 6 ounces.

About three hours postpartum, the infant's color became dusky and a deep cyanosis with labored respiratory effort gradually developed. The baby was placed in an atmosphere of 90 per cent oxygen which eased the respirations. All attempts at feeding were regurgitated.

The infant appeared normal except for cyanosis and the marked play of the accessory muscles of respiration. The cardiorespiratory examination was unusual. There were absent breath sounds over the entire left and the right anterior chest; breath sounds were present over the right chest posteriorly. Occasional intestinal borborygmi were audible over the left chest. The cardiac sounds were best heard to the right of the midline and were normal. The abdomen was flat to percussion. Rectal examination was normal and revealed meconium on the finger.

An x-ray study, as shown in Figure 1, was reported as follows: "The entire left chest is filled with abdominal viscera. The upper portion of the right chest contains intestines. The heart and mediastinum are displaced markedly to the right. There is a very small amount of lung tissue visible in the lower half of the right lung field. Most of the gastrointestinal tract is in the chest, except for descending colon and rectum."

The presence of the intestinal pattern in the left chest suggested the usual posterolateral defect of the left diaphragm. The intestinal pattern seen in the right chest indicated a possible defect in the anterior mediastinum. The report of a definitely proved case by Ochsner et al. suggests that this defect may be a complete absence of the anterior mediastinum or possibly pleura, intravening as a hernial sac. The above report is a study of the embryologic and clinical aspects of this unusual congenital anomaly. The artist's conception of the defects present in this baby is shown in Figure 2.

The infant was carefully prepared for operation thirty hours after birth. It was carried out under open drop ether, using positive pressure anesthesia during the period of expanding the left lung. A preliminary left phrenic nerve crush was done.

The abdominal approach was used. The technical procedures employed were essentially those recommended by Ladd and Gross.[2] The only abdominal viscera present on inspection of the peritoneal cavity were the liver, descend-

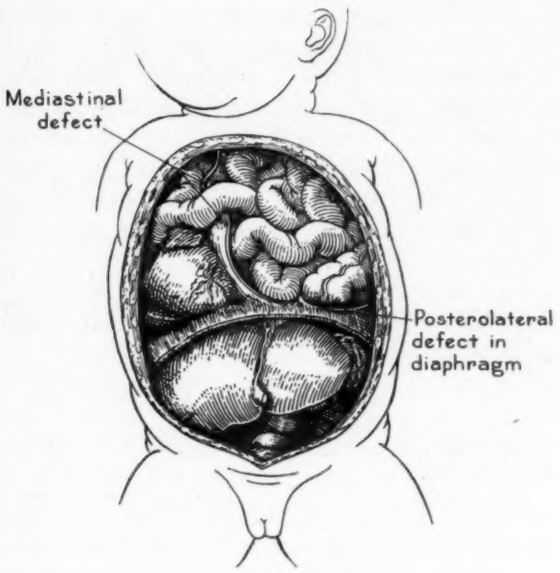

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Fig. 2. Artist's conception of posterolateral diaphragmatic defects and anterior mediastinal defect.
Fig. 3. Schematic drawing showing intestine removed from peritoneal cavity and posterolateral defect without posterior left present. (After Ladd and Gross.)

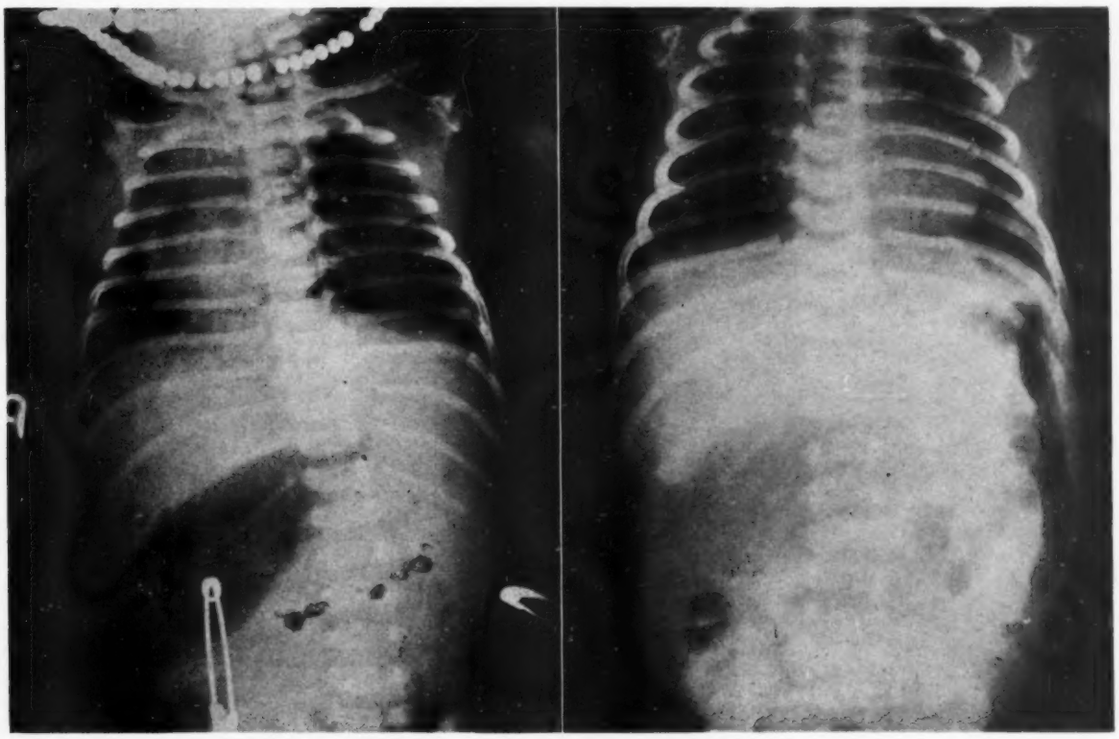

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Fig. 4. X-ray of chest and abdomen, first postoperative day. Normal intestinal pattern in abdomen, air in both thoracic cavities and heart and mediastinum still on the right.
Fig. 5. X-ray of chest and abdomen on tenth postoperative day. Heart and mediastinum in normal position, both lungs expanded; intestinal pattern in abdomen normal.

ing colon and rectum. The remainder were in the right and left chest, having traversed there through the posterolateral defect in the left diaphragm. A catheter was thrust through the defect in the diaphragm and passed up to the apex of the left pleural cavity. Thus the left intrapleural pressure was made equal to the atmospheric pressure and markedly facilitated the removal of the abdominal viscera from the right and left thorax. All the viscera were then brought out on the anterior abdominal wall (Fig. 3) and the rent in the diaphragm closed as illustrated. In this case, no posterior leaf was found as is seen in the posterolateral defects. An attempt was then made to expand the left lung by positive intratracheal pressure. Air was sucked from the left pleural cavity through a catheter around which a purse-string suture had been placed in the diaphragm. It was possible to close the abdomen in anatomic layers.

The postoperative course was uneventful. A 50 cc. blood transfusion was given immediately and penicillin, 10,000 units every three hours for twenty four hours, was administered prophylactically. The left lung did not entirely expand nor did the right. There was air in both thoraces, a proof of a mediastinal defect. (Fig. 4.) On the tenth postoperative day, both lungs were fully expanded. (Fig. 5.)

The infant was discharged on the fourteenth day after operation, having regained its birth weight, and has developed normally since.

REFERENCES

1. Ochsner, A. de Bakey, M. and Murray, S. Absence of the anterior mediastinum with report of case associated with congenital diaphragmatic hernia. *Surgery*, 6: 915, 1939.
2. Ladd and Gross. Abdominal Surgery of Infancy and Childhood. Philadelphia, 1941. W. B. Saunders Co.

Announcement: The American Association for the Study of Goiter will meet at the King Edward Hotel, Toronto, Canada, May 6, 7 and 8, 1948. The program for the three-day meeting will consist of papers dealing with goiter and other diseases of the thyroid gland, dry clinics and demonstrations.

PRESENCE OF CECUM AND APPENDIX IN SCROTUM IN LARGE INDIRECT INGUINAL HERNIA

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THE purpose of this paper is to present a case in which the cecum and the appendix were found in the scrotum in a large inguinal hernia.

That the appendix itself has been found in a hernial sac has long been known. Ryan, in 1937, presented figures showing that of 8,692 cases of appendicitis, eleven or .13 per cent were in the hernial sac. Coley found that of 2,200 hernias operated that the appendix was found seventeen times in the sac, an incidence of 8.10 per cent.

That the presence of the cecum and the appendix in a hernial sac is rare is found by scanning the literature. A case is herewith presented in which the cecum and the appendix were found in the scrotum in a large inguinal hernia.

CASE REPORT

M. R., a sixty-seven year old, white male, came into the clinic complaining of right scrotal pain and cramp-like abdominal pain. Examination revealed a heavy set male, weighing about 250 pounds with a huge scrotal enlargement. The first impression was that he had a large hydrocele, but the scrotum did not transilluminate well.

He was taken to the hospital for surgery. At operation an incision was made in the lateral aspect of the scrotum extending into the right inguinal region through the skin, subcutaneous tissue and dartos. The sac was located, picked up and incised and was found to contain several loops of bowel which were replaced within the abdomen only after the internal ring, which was quite narrowed, was incised. The cecum and the appendix were left both of which were fused with the sac wall. They were dissected free with some difficulty and in one area a portion of the sac wall had to be left attached to the cecum in order to free it. The appendix was removed and the stump was inverted. Then the cecum was replaced within the abdomen and the internal ring was closed with interrupted cotton sutures. A small hydrocele was found, and it was treated as in the Bottle operation. The hernia was repaired using interrupted cotton sutures throughout.

Postoperatively the patient did very well. His convalescence was uneventful, and he was discharged from the hospital on the tenth postoperative day.

SUMMARY

This case is presented to show that in large inguinal hernias one may encounter the small or large bowel although the latter is not so common. In many cases the appendix may be found in the hernial sac. If the appendicitis should be acute, its differentiation from strangulated hernia may be difficult.

In appendicitis the pain may come in spasms and radiate, and in strangulation the pain is usually steady and dull and constantly increasing in severity.

REFERENCES

1. BURGER, T. and TORBERT, H. C. Diagnosis of acute hernial appendicitis. *Am. J. Surg.*, 42: 429, 1938.
2. RYAN, W. J. Hernia of vermiform appendix. *Ann. Surg.*, 106: 135, 1937.
3. SHAVER, K. and ALTMAN, R. Appendices found as contents of femoral herniae. *Ann. Surg.*, 101: 1270, 1935.

PLASTIC RECONSTRUCTION FOLLOWING THIRD DEGREE BURN OF FOREARM

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THE following case history of recovery from third degree burn of forearm presents some interesting aspects from the viewpoints of the injury and the subsequent treatment.

FIG. 1. Appearance a few weeks following admission with moderate granulation and exposed devitalized portion of ulna.

On September 3, 1942, at 8:15 A.M., H. K. was working on a combiner, which is a machine consisting of a hot plate and an opposing spiked surface. While in the act of putting paper through the combiner, his left hand and forearm were caught between the heating plate and the spiked surface or collar. The injured person was taken to a nearby hospital where he remained for two weeks.

H. K. was then admitted on my service to the Israel Zion Hospital, Brooklyn, New York, on September 18th, the first of eight admissions; the last was on April 29, 1943.

The patient, age thirty years, had had a bilateral hernioplasty performed twenty years previously. General examination was negative. All findings were confined to the left upper extremity. The entire length of the dorsal, ulnar and volar aspects of the left forearm were practically denuded, leaving only the radial aspect covered with skin and the proximal two-thirds of the ulna exposed. The muscle bellies of the extensor carpi ulnaris and extensor digitorum communis were already gangrenous. Sloughing was present in the tendon of the extensor carpi ulnaris, with a purulent discharge from the wound, yellowish green in color and foul smelling. The distal phalanges of the four fingers of the left hand were severely crushed.

The diagnosis was that of a third degree burn and a crushing injury of the left forearm and hand, involving the ulna, muscle bellies and tendons.

A five per cent solution of sulfathiazole was used to irrigate the wound together with powdered applications of sulfathiazole at intervals of every few days. After four weeks' hospitalization, the patient, his wound covered with an Orr dressing, was discharged from the hospital on October 18, 1942.

Then followed five readmissions for changes of the Orr dressings between November 30, 1942, and March 2, 1943, the dates being November 30th, December 12th and 22nd, 1942, and January 14th, February 13th, and March 2, 1943, respectively.

On March 19, 1943, the patient was admitted to the hospital for the seventh time, whereupon a 6¾ inch section of the outer portion of the distal three-fourths of the ulna, occupying about one-third to one-half of the circumference of the ulna, was removed by sequestrotomy.

On April 28, 1943, the patient again was admitted, and the next day was begun the first stage of a broad abdominal skin flap to the left forearm. The skin of the infra-umbilical region was utilized which extended from one anterior

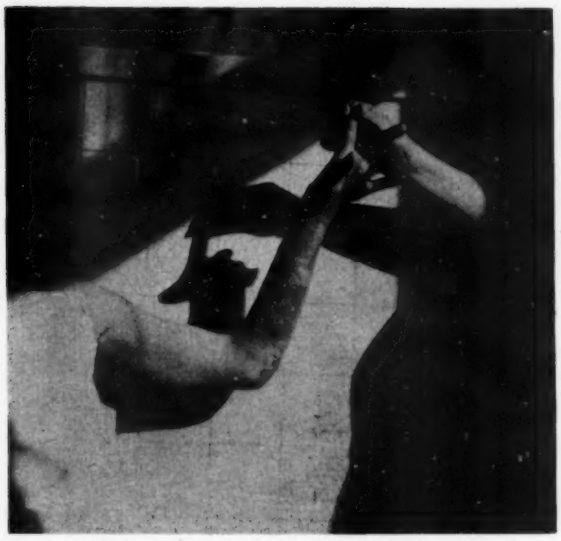

Fig. 2. Volar aspect with healing following first and second degree burns.

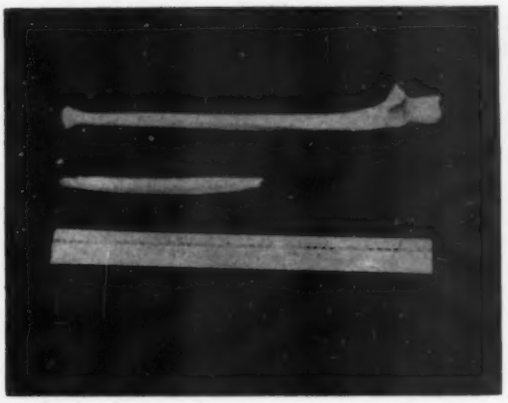

Fig. 3. Segment of removed devitalized ulna compared to a normal ulna.

superior iliac spine to the other. This free margin of the abdominal graft was sutured to the previously freshened edge along the dorsal aspect of the left forearm.

The wound having healed by primary union, all sutures were removed on the fourteenth postoperative day. Nineteen days later, the second stage was performed by severing the lower border of the broad abdominal skin flap which was then sutured to the previously freshened skin edge on the anterior aspect of the forearm. As the take on the forearm proved successful, all sutures were removed eight days postoperatively.

This plastic procedure was followed within twenty-seven days by a split skin graft from the left thigh to the abdomen, the purpose of which was to cover the extensive abdominal defect resulting from the broad pedicle graft. The following procedure was used to do this split skin graft:

With the aid of paraffin mesh gauze, a pattern of the abdominal raw surface was cut out. Following preparation of the edges of the abdominal defect and using a Padgett dermatone, a section of skin 0.018 inch thick, 7¾ inches long and 4 inches wide was taken from the left

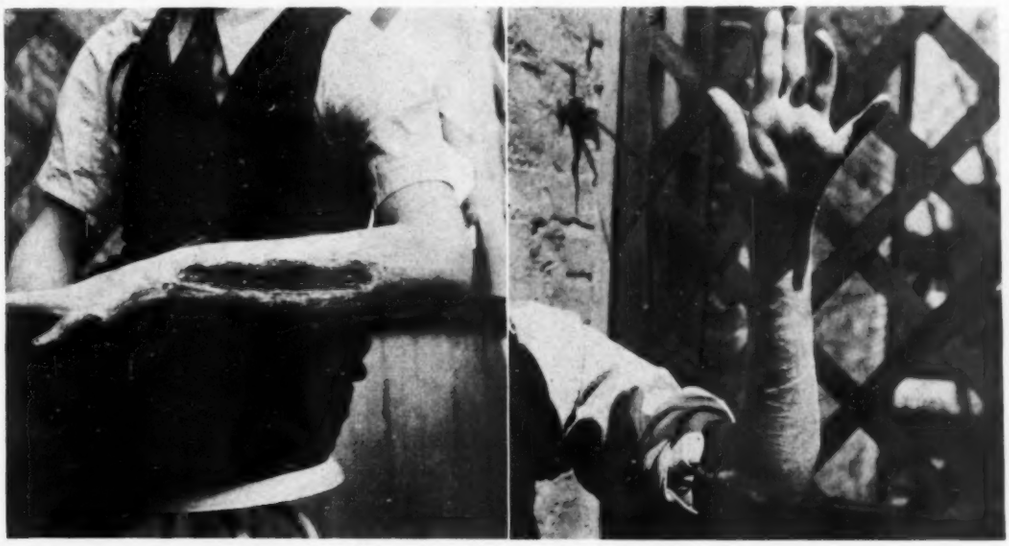

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Fig. 4. Granulations covering area of previously resected devitalized ulna.
Fig. 5. Volar aspect of healed left forearm.

FIG. 6. Wide abdominal flap ten days after operation.

FIG. 7. Release of abdominal skin flap revealing extensive granulating surface of abdominal wall.

thigh. This oblong section was divided into two triangular grafts, corresponding to the paraffin mesh pattern, and then accurately sutured into position so that they exactly covered the defect of the abdominal skin. The surface of the graft was then pie-crusted and postoperatively the split skin graft was kept moistened with saline. Following the split skin graft, the sutures were removed eleven days postoperatively. On June 12, 1943, the patient was discharged after eighty-three days of hospital treatment, forty-four of which were devoted to the various plastic procedures.

The following results were revealed by a subsequent examination: The recipient area on the left forearm was soft and pliable and showed good color; it also adequately protected the sharp dorsal border of the regenerated ulna. This effect compared favorably with a non-grafted area of dermis in the region of the ulnar aspect of the wrist which was thin, dried, hard and scaly. The ungrafted area presented a hard, unstable scar and compared poorly with the grafted area both in efficiency and function.

The donor sites on the abdominal wall and on the left thigh had healed. There was, however, limitation of range of motion of the wrist up to 60 degrees, as compared to a normal range of 90 degrees, resulting in a one-third loss of motion range. Ankylosis of the small left finger and a firmly scarred area, measuring 1 by 4 inches along the ulnar aspect of the left wrist and hand, were present. Amputation of the patient's ankylosed little left finger is advisable but has been deferred for a time, as it is no hindrance to his present occupation as a clerk.

The technic of the Padgett dermatone grafting process is well known to most surgeons. Nevertheless, when the bone is

FIG. 8. Split skin graft from left thigh covering defect of abdominal wall.

Fig. 9. Healed area of split skin graft.

Fig. 10. Take of graft to abdominal wall and final result of forearm graft.

superficial, the flap, as previously indicated, is desirable in order to give the bone sufficient covering. Where the flap has a wide base, similar to the one described, it is unnecessary to use a tubular graft with a consequent gain in time. The second World War has provided the opportunity of demonstrating the successful application of the above method which has proved itself a great aid in healing and time-saving. One must be cautious, however, that the base is at least as wide as its free edge.

The grafts were cut between .016 to .020 of an inch skin thickness, the latter varying with age, sex and region.

In the adult female the thickness on the inner side of the thigh measures .018 to .020 mm.

The measurement in a two to three month old infant is .010 to .012 mm.

From the abdomen of a six year old child, it is .014 to .016 mm.

In children twelve to fourteen years old, the maximum thickness is .016 mm.

Skin grafting should be done as quickly as possible after the infection has been placed under control, provided there is a clean granulating base. In the present instance, because of the devitalized ulna excised by the sequestrotomy, it was necessary for granulations to cover the ulna and the other raw surface completely before any plastic procedure could be attempted. The broad flap pedicle graft to cover the defect of the forearm was preferred to a split skin graft so that a good thick layer of skin, together with subcutaneous elements for an exposed bony surface, could be supplied.

One of the outstanding features of the Padgett dermatone is that it permits exceptional advances in plastic surgery. By its use large skin areas of any uniform thickness may be taken from donor sites which hitherto could not be utilized. As the donor site heals sufficiently within ten to twelve days, dressings may be necessary for this period. The pressure dressings are then changed daily and kept moist with boric acid or saline solution. If necessary, the same donor site may be used again at a later period in cases of extensive burns.

SUMMARY

As indicated by the accompanying photographs, plastic reconstruction following a third degree burn may be successfully accomplished when the procedure employed is functionally efficient. The proper grafting of the abdominal skin flap is of the greatest importance in achieving satisfactory results and the use of the Padgett dermatone in skin removal contributes greatly to the final result.

RECONSTRUCTION OF THE FACE AND ALL FOUR EYELIDS

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A METHOD of reconstruction of the face and eyelids is described which provides a covering that approximates the normal in contour, flexibility, expression and texture more nearly than that produced by other means.

CASE REPORT

The patient, a twenty-seven year old soldier who was burned in France by a gasoline explosion in January, 1945, was admitted for treatment of severe ectropia of all four eyelids, granulating third degree burns of the whole left parietal region of the scalp and marked deformity of the face. Scars from incomplete "takes" and from the suture lines of multiple split-thickness skin grafts produced with the healed burned areas the distorted condition of the face. Shrinkage of these grafts contributed a large part to the deformity.

The eyes escaped damage at the time of the burn by reflex forcible closure of the lids. A tarsorrhaphy of both right and left lids, which was performed four days after the injury, maintained protection of the corneas and conjunctivae for a few weeks. Two months after the injury, while still at an overseas hospital, areas of free skin from the abdomen were grafted on all four lids. Although the corneas and conjunctivae were uninvolved on admission to our hospital, these skin grafts, which had served to prevent severe infection, did little toward ultimate correction of the deformities. (Fig. 1.)

Hypertrophied scars at the margins of adjoining skin grafts and scattered areas of depigmentation, where parts of the grafts had failed to grow, were with the ectropion of the right upper lip the background for the most startling feature of this face; the severe ectropia of all four eyelids with eversion and hypertrophy of the tarsal conjunctivae which were most striking manifested by closure of the eyes. (Fig. 2.)

Six days after admission to our hospital, grafts to all lids and secure tarsorrhaphies of both right and left lids were performed. Under endotracheal inhalation ether anesthesia, a split-thickness skin graft taken from the left chest with the Padgett dermatome set at 0.015 inch was used to reconstruct the eyelids.

An arched incision was made parallel to the free lid margin in the left upper lid beginning about 5 mm. medial to the inner canthus and sweeping around laterally to a point about 12 mm. beyond the outer canthus. Considerable scar tissue which was encountered beneath the skin was dissected out and removed. In order to free the conjunctiva of the upper lid from the scar tissue contracting it, the dissection was carried back to a depth approximately equal to the equator of the eyeball. Only the margin remained of the lower lid. An incision was made parallel to and approximately 5 mm. from its border, and when all subcutaneous scar had been removed, only the conjunctiva and a few bundles of muscle fibers were left. The lids were well mobilized and each margin easily approximated its fellow.

A subtotal tarsorrhaphy was performed leaving unjoined a small central area anterior to the pupil and a similar area at each of the canthal regions. Wheeler lid sutures were used to hold the denuded lid margins together until firm union had occurred.

The previously cut skin grafts, each of which measured approximately 35 mm. in length and 20 mm. in width, were sutured with interrupted horsehair into the defects of the lids. Care was taken to follow the lines of skin tension by placing the grafts on the eyelids so that these lines were horizontal. A stent of cod liver oil-sulfathiozole gauze[7] and cotton "torpedo" were tied over each graft so that there would be firm, even pressure holding it in its bed. The lids of the right eye were repaired in a similar manner.

At the first postoperative dressing one week later, all of the grafts were viable and in good condition except for the loss of the medial half of the right lower lid graft. The right medial tarsorrhaphy had become separated and it was probably this that caused the partial loss of

FIG. 1. Ectropia of lower lids and right side of mouth.
FIG. 2. Ectropia of upper and lower lids; note hypertrophied conjunctivae.
FIG. 3. Ectropia of lower lids removed and right side of mouth improved.
FIG. 4. Eyelids close over globe with no eversion of conjunctivae.

STEINREICH, OTTO S. and CALLAHAN, ALSTON. Am. J. Surg., 74: 839–840, 1947.

one graft. Daily cleansing of the new surfaces with boric acid, saturated solution and zinc sulfate, 1 per cent, was performed for two weeks.

The granulation tissue on the left parietal region of the scalp was infected with Staphylococcus aureus and Bacillus pyocyaneus and remained refractory to all types of treatment until continuous soaks of a penicillin-acetic acid mixture was applied. This solution was developed and extensively used by the senior author in the preparation of infected burns for skin grafting. The mixture consisted of equal parts penicillin, 250 units per cc. and acetic acid, 1 per cent. Following application of these soaks for eight days, the granulations were clinically clean, firm, pink and healthy.

Approximately 32 sq. inches of skin cut to 0.010 inch with the Padgett dermatome was taken from the left side of the back. After the granulation tissue of the head was shaved down to the firm, yellow scar base with a Ferris Smith knife, the graft was sewed in place with interrupted No. 0000 black silk sutures. A quilting suture of the same material was placed throughout the graft and a stent of cod liver oil-sulfathiozole gauze and abdominal pad were sutured in place over the graft to maintain firm, even pressure. The donor site on the back was covered with six layers of the same kind of gauze and then a firm pressure dressing was applied to both the donor and recipient sites.

On the sixth postoperative day, all of the sutures were removed at the first dressing and the graft was found to have "taken" in entirety. The donor site was dressed for the first time on the twelfth day following operation and it was found that epithelialization was complete. Both the grafted area and the donor site were massaged several times a day with cocoa butter for two months. After three months had elapsed, fat had become deposited beneath this graft and the texture and mobility of the skin was virtually the same as that of normal scalp.

The emergency surgery having been completed on this patient, prolonged consideration was given to the best means of effecting an improvement of his facial deformity. Split-thickness skin grafts of the face in this patient, as in other similar patients whom have been observed for as long as twelve months postoperatively, have left much to be desired. When large portions of the face have been covered with even, thick split-thickness skin, we have invariably found that a waxy, expressionless, mask-like appearance results which is associated with some degree of contracture or ectropion of the orifices involved in or adjacent to the grafted area.

It was therefore decided that full-thickness skin with its own subcutaneous tissue and blood supply would provide the optimum covering for this patient's face. Since the pectoral region on one side had been used as a donor site, this readily accessible area could not be used. The only remaining symmetrical area possessing skin of the same general texture as the face was that found on the inner surfaces of the arms. It was therefore planned that a bicipital tube, which would cover half the face, would be made on each arm.

A tube 6½ inches long and 4 inches wide was prepared on the inner aspect of the right arm over the biceps muscle. The defect left in the skin of the arm by the formation of the tube was covered with a skin graft cut from the right thigh with the Padgett dermatome set at 0.015 inch. The graft was sutured in place with No. 0000 black silk. A quilting suture of the same material was taken throughout the graft. A stent of cod liver oil-sulfathiozole gauze and abdominal pad were sutured in place over the graft to insure proper pressure upon it. The arm was immobilized in extension with a posterior splint made of six folded hand towels.

Seven days later, all of the sutures were removed from the tube which was well healed and from the graft which had "taken" completely. No further dressings were applied but immobilization of the arm was maintained for two weeks longer so that the graft might become completely organized. Both the graft and donor sites were massaged several times daily with cocoa butter. A tube of the same dimensions was later formed on the left arm in a similar manner. (Fig. 5.)

Twenty-two days after formation of the tube on the left arm, a flap of skin 4 inches wide and 2 inches long, beginning just below the mandible on the left side of the face, was elevated. The distal end of the tube on the left arm was severed. The tube was then doubled on itself and 2 inches of it unrolled and implanted into the defect on the left side of the face made by elevation of the flap. Interrupted No. 0000 black silk vertical on end mattress sutures were used to approximate the tube to the face.

After implantation of the tube, all but a small portion of the flap of scar on the face was excised. The portion of flap that was allowed to remain was sutured to the edges of the

FIG. 5. Bilateral bicipital tubes with skin grafts to arms.

FIG. 6. Distal end of tube migrated to left submaxillary region.

opening in the partially unrolled tube in order to eliminate drainage from the raw surfaces of the latter. Cod liver oil-sulfathiozole gauze and firm pressure dressing were placed over the migrated portion of the tube. The arm was immobilized with the left hand on the right side of the head by gauze bandage and adhesive tape. All sutures were removed on the sixth day after operation and the incision line was found to be well healed. In order to prevent widening of the incision scar, collodion strips were placed along it for support for two weeks. (Fig. 6.)

Thirty-one days after the distal end of the tube had been migrated to the face, the proximal end of the tube was severed from the arm. Although there was active bleeding from the cut end of the tube, it was believed that too great an insult to the blood supply would result if the remainder of the tube was unrolled and implanted. Consequently, only the distal 2 inches were unrolled. After elevation and excision of the scarred skin of the right nasofacial angle, the nose and part of the left cheek the unrolled part of the tube was sutured in place with No. 0000 interrupted black silk. A portion of the scar of the cheek was left as a flap to close the open portion of the tube.

The tube had been severed in the axillary crease of the left arm. This defect was closed with No. 40 cotton interrupted sutures in the subcutaneous tissues and No. 0000 black silk in the skin. The same type of gauze and pressure dressing that was used previously was applied to each of the operative sites. On the fourth day following operation, alternate sutures were removed from the face and the incision was well healed. The remainder of the sutures were taken out of the face on the sixth postoperative day when all the sutures were excised from the axilla where the edges of the incision were found to be united.

Twelve days later, the distal end of the bicipital tube of the right arm was migrated to the right submandibular region in the same manner as that described for the left side.

It was believed, however, that completely unrolling and implanting the tube would produce a better cosmetic result than that obtained by the method employed in migrating the tube on the left side of the face. In order to do this and still be assured of good circulation in the tube, the blood supply from the proximal end was partially interrupted by incising the skin after twenty-eight days. This procedure resulted in increased and hypertrophied circulation to the tube from the distal end which had been previously migrated to the submandibular region.

Fourteen days afterward, the previously migrated bicipital tube on the right arm was severed at its proximal end and unrolled. Much of the fat was removed from the pedicle flap, then the scarred skin which had produced ectropion of the right upper lip and distortion of the angle of the mouth was excised along with the damaged tissue of the whole right cheek. The pedicle flap was then laid into the defect and sewed in place with No. 0000 interrupted black silk sutures. The upper end of the flap was crowded into the lower medial portion of the right eyelid and was used to correct the small ectropion which had resulted from the partial loss of the eyelid graft. The defect in the right arm was closed in a manner similar to that used on the other arm.

On the fifth postoperative day, alternate sutures were removed and the wound was well healed. The contour of the cheek was found to be very satisfactory. The remainder of the sutures were removed on the following day.

The portion of the pedicle flap on the left side of the face that had remained as a tube was unrolled. After the scar of the cheek that it covered was excised, the flap was implanted into the defect in the same manner as previously described.

After the last operation it was obvious that the left side of the face contained much more fat than the right. Before correcting this, however, formation of a more acceptable nasofacial angle on the left was attempted. A vertical incision was made on the left side in the migrated tube pedicle along the junction of the nose and face. Fat was removed from the edge of the flap on each side of this incision and each skin edge then sewed down to the base of the cheek with No. 40 cotton in the subcutaneous tissues. The incision was then closed with No. 0000 interrupted black silk sutures. Two mattress sutures of No. 00 black silk were placed along the nasal edge of the incision, brought through the septum and tied over a lead button on the right side of the septum. This was a further means of inverting the edge of the incision and producing a nasofacial fold. The skin sutures were all removed on the fourth day after operation and the wound was well healed. On the tenth postoperative day, the mattress sutures were removed and it was believed that some success had been attained.

The superior incision line of the flap on the left side of the face was opened and a large amount of fat was excised from the under surface. The incision was closed in the usual manner. When the sutures were removed on the fourth postoperative day, the wound was well healed and the contour of the left cheek closely approximated that of the right side of the face.

There was no dysfunction of the arms and the grafts over the biceps were soft, pliable and cosmetically acceptable. (Fig. 7.) The tarsorrhaphy uniting the left lids were divided four months after they were constructed but, because of the contraction of the ciciatricial tissue as well as the various surgical procedures on the face, the tarsorrhaphy uniting the right lids was not divided for nine months. Vision in each eye was 20/20 uncorrected and ectropia of the lids were not present. (Figs. 3 and 4.)

Fig. 7. Function of arms unimpaired and appearance good.

Desiccation of the cornea with ulceration is no longer likely because of the protection offered by the new lids. The final appearance is satisfactory and the patient states that to him the extensive and prolonged surgery was very worth while.

CONCLUSIONS

The results in this case are far superior to those where split-thickness or even full-thickness skin grafts have been employed. When it is necessary to resurface a large area of the face, full-thickness skin with its own circulation-bearing subcutaneous tissue is the most acceptable material. The sites most readily available and most closely resembling the skin of the face are the pectoral and bicipital regions. In females, the latter site is preferable since no damage is done to the breasts.

REFERENCES

1. Barsky, Arthur J. Plastic Surgery. Philadelphia, 1938. W. B. Saunders Co.
2. Brown, J. B. and McDowell. Skin Grafting Burns. Philadelphia, 1943. J. B. Lippincott Co.
3. Callahan, Alston. Traumatic Surgery of the Eye and Adnexa. Springfield, Ill. Charles C. Thomas. (In print)
4. Fomon, Samuel. Surgery of Injury and Plastic Repair. Baltimore, 1942. Wm. Wood & Co.
5. National Research Council. Plastic and Maxillofacial Surgery Skin Grafting. Philadelphia, 1942. W. B. Saunders Co.
6. Padgett, Earl C. Skin Grafting. Springfield, Ill., 1942. Charles C. Thomas.
7. Theissen, N. W. and Steinreich, O. S. Local treatment of burns in the army. *Mil. Surgeon*, 91: 208–211, 1942.

UNUSUAL METASTATIC MANIFESTATIONS OF BREAST CARCINOMA*

CUTANEOUS HEMORRHAGIC METASTASIS

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THE breast is the most frequent site for the primary lesion metastasizing to the skin. Cutaneous metastasis from neoplastic lesions in other sites is an infrequent occurrence. Redlich,[12] in a series of 500 cases of carcinoma originating in various sites, found the incidence of skin metastasis to be 0.4 per cent and Buday[3] encountered three instances of cutaneous metastasis in a group of 336 patients with carcinoma in various locations.

The routes by which a neoplasm may invade the integument are direct extension, permeation or embolism through the lymphatics, or embolism through the blood stream. The resulting lesion, usually a subcutaneous nodule, appears in the advanced stages of carcinoma. In mammary carcinoma it occurs predominantly in the skin of the breast, or after mastectomy, as a recurrent lesion in the integument of the chest or upper arm. The nodules are usually asymptomatic, pink or red in color. They vary from a millimeter to several centimeters in diameter, are discrete or confluent and may elevate or infiltrate the overlying epidermis. If the nodules invade the epidermis, they may cause ulcerating or fungating tumors. On occasion, they may form maculopapular, pseudocystic or pseudovesicular epidermal lesions. If the subcutaneous nodules coalesce, they may produce the hard, fixed, nodular surface in the breast integument known as cancer en cuirasse.

The phenomenon variously described as mastitis carcinomatosa (Volkman,[15] Billroth[2]), acute breast cancer (Rodman[13]), inflammatory carcinoma (Lee and Tannenbaum[8]) and erysipelas carcinomatosum (Kuettner[7]) is caused by cancer cells in the subepithelial vascular spaces secondary to cancer of the breast. This condition is characterized by the presence of a diffuse redness, induration and edema of the breast integument in addition to the mass in the breast. The surface temperature of the involved skin may be elevated. The inflammed skin area may have a definite, well defined, indurated border which advances peripherally as the disease progresses. In one patient observed by us there were patchy red areas, soft to the touch and indistinguishable in consistency from the surrounding, apparently uninvolved, skin. Gentle pressure on the red areas produced a marked blanching. A biopsy revealed subepithelial spaces filled with cancer cells.

Occasionally, the carcinoma cells propagate in the subepithelial spaces in a plane parallel with the epidermis to produce the condition known as carcinoma eburnée (Alibert[1]). In a case described by Schreiner and Volavsek[14] the skin of the lower extremities, abdomen and thorax became indurated, tense and shiny. The histologic finding was the presence of sheets of extravascular carcinoma cells invading these subepidermal regions secondary to a carcinoma of the breast.

Weber[17] and Van Vonno[16] described instances of cutaneous metastatic breast carcinoma in which the lesion had the appearance of dilated surface blood vessels. The histologic picture in these cases was that of subepithelial dilated capillaries engorged with cancer cells some of which had become necrotic. Weber suggested that

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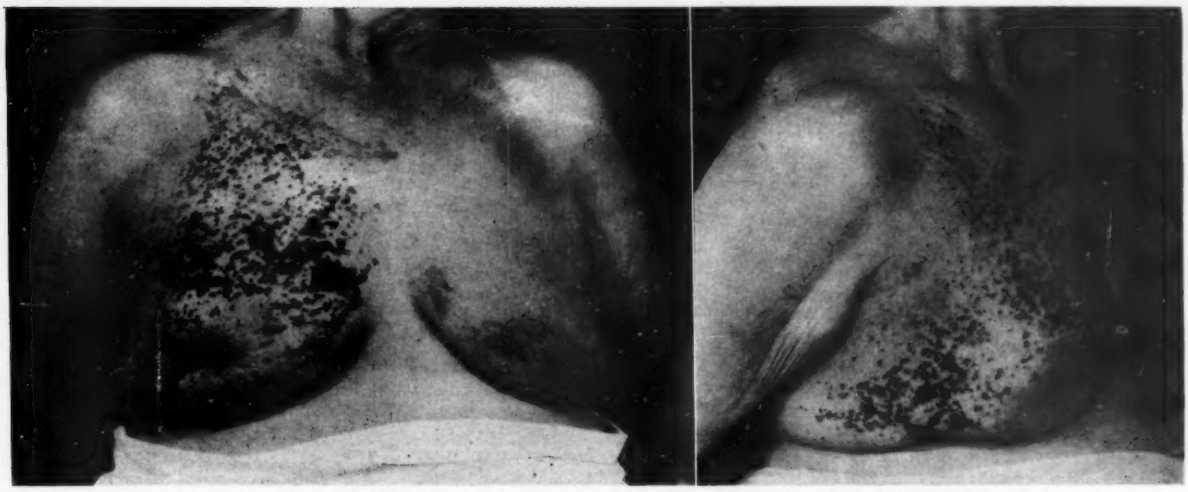

1 2

Fig. 1. Case 1. The retraction of the nipple, pig-skin appearance and hemorrhagic vesicular-like lesions are shown in this photograph.
Fig. 2. Case 1. This is a lateral view showing the same features as in the previous figure.

this phenomenon be known as carcinoma erysipelatodes telangiectaticum. A somewhat different cutaneous manifestation of breast cancer, in which the secondary lesion produced the clinical impression of small, discrete vesicles or cysts, was reported by Freeman and Lynch.[5] The vesicles, however, contained no fluid. Microscopic investigation of the vesicles disclosed that they contained masses of adenocarcinomatous cells with areas of central necrosis.

We have encountered in two patients an unusual type of skin manifestation secondary to breast carcinoma in which the lesions resembled hemorrhagic vesicles. A description of these cases follows:

CASE REPORTS

Case 1. M. Mc., a sixty-three year old white woman, observed a progressive enlargement of the right breast and a retraction of the nipple about a year before she first visited the clinic. During this period there was an intermittent sanguineous discharge from the right nipple. The patient also noticed the appearance of "blood blisters" on the skin of the involved breast.

Examination revealed the right breast to be elevated and the nipple retracted and stuck. In the subareola region there was a 3 by 4 cm. mass to which the overlying skin was attached. The entire skin surface of the right breast, extending upward to the clavicle and lateralward to the posterior axillary line, was covered with a vesicular and nodular eruption. The lesions, which varied from 0.5 to 2 mm. in diameter, were discrete in some areas and confluent in others. The smaller lesions were pink in color but most of them were a deep purple and had a hemorrhagic appearance. (Figs. 1 and 2.) They were firm on palpation.

Aspiration biopsy of the breast mass was reported as carcinoma. Microscopic study of an excisional biopsy of a skin nodule revealed the lesion to consist of subepithelial spaces lined with endothelium and filled with blood and cancer cells which appeared to be adenocarcinoma. (Figs. 3 and 4.) Roentgenographic studies of the chest were negative for evidence of metastasis. The patient later developed extensive metastases to the lumbar spine and pelvis.

Case 11. R. S., a fifty-four year old white woman, noticed a mass in the left breast two months before her first visit to the clinic. The mass increased in size and firmness during the two months and in the second month she noticed an eruption on the skin of the involved breast. One week before she came to this clinic, the patient discovered a lump in the left side of her neck.

Examination revealed the left breast to be elevated and one-half again as large as the right. The nipple was retracted and stuck flush with the areola surface; there was some retraction of the areola itself. The lower half of the breast was edematous and had a pigskin appearance. There were some patches of ery-

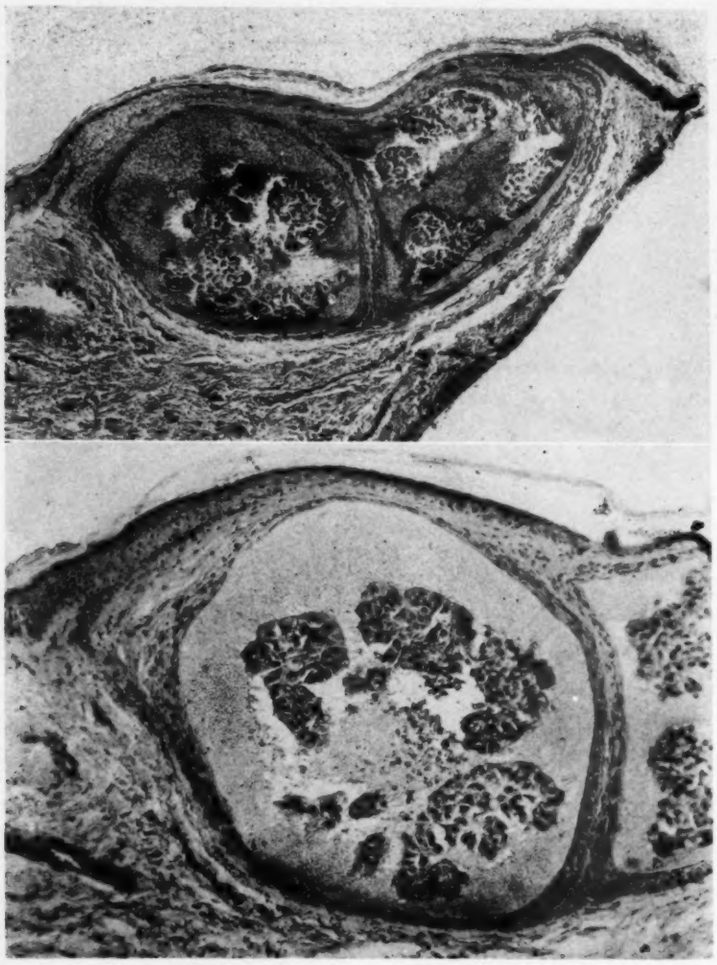

Fig. 3. Case 1. This is a microphotograph of the lesions shown in the previous figures. Two subepithelial spaces lined with endothelium and filled with blood and cancer cells are seen.
Fig. 4. Case 1. This is a higher magnification of one of the subepithelial spaces shown in the previous photograph.

thema in this region. Over the anterior aspect of the breast and involving about one-third of the skin surface there was a large area of pinkish discoloration. In this location, there were numerous, deep purple nodules interspersed with some lighter purple and pink nodules. (Fig. 5.) In some regions, the various groups of nodules were confluent. They extended as isolated lesions as far as the left anterior axillary line. Beneath the pigmented area of the skin and attached to it was an indefinitely outlined mass measuring approximately 8 by 9 cm. In the tail of the same breast, there was obvious dimpling of the skin beneath which another mass measuring 4 by 5 cm. was palpable. This mass appeared to be continuous with a group of nodes extending high up into the left axilla. There was a hard fixed mass of nodes occupying the entire left supraclavicular space extending up the neck to the region of the mastoid process and anteriorly to the posterior border of the parotid gland. There were several discrete, pink nodules in the skin of the left supraclavicular space.

The mass in the left axilla was aspirated and reported as metastatic mammary carcinoma. A microscopic study of an excised nodule revealed mammary cancer infiltrating the subcutaneous lymphatics. (Figs. 6 and 7.) Radiographic studies of the chest, lumbar spine and pelvis were negative for evidence of metastasis. The patient died of the disease five months after her initial visit to the clinic.

We have been able to find three cases in the literature similar to the ones we are

reporting. Newcomb,[10] in 1924, described a case of breast carcinoma associated with bluish black papules and vesicles in the breast integument. It had the appearance of a melanoma. Histopathologic study of these papules revealed endothelial lined subcutaneous spaces containing cancer cells and blood.

In a case reported by Nix,[11] the patient developed in the skin of the shoulder numerous purplish lesions which appeared to be thrombosed vessels. Clinically, the metastatic lesion resembled a hemolymphangioma. In some areas, the lesion appeared to be composed of discrete cysts but no fluid could be obtained by aspiration. Microscopic examination of this lesion revealed dilated lymphatics and capillaries packed with nests of cancer cells and thrombosed blood.

A similar lesion was described by Nanta and Salvador[9] under the title of cutaneous angio-epitheliomatosis. This consisted of numerous, pink, red, violaceous and black nodules arising from the breast integument in a patient with mammary cancer. In places, the lesion appeared to consist of dilated blood vessels. Histologic investigation disclosed subcutaneous capillaries containing cords of neoplastic cells and masses of erythrocytes. Despite the massive invasion of the capillaries, the lymphatics apparently were not involved.

FIG. 5. Case 11. Retraction of the nipple pig-skin appearance and hemorrhagic vesicular lesions are seen.

COMMENT

At times, carcinoma of the breast may be associated with such apparently diverse phenomena described as inflammatory carcinoma, carcinoma eburnée, carcinoma en cuirasse, carcinoma erysipelatodes telangiectaticum, vesicular and hemorrhagic vesicular lesions. All of these phenomena can be explained on the basis of the same underlying mechanism, namely, the occlu-

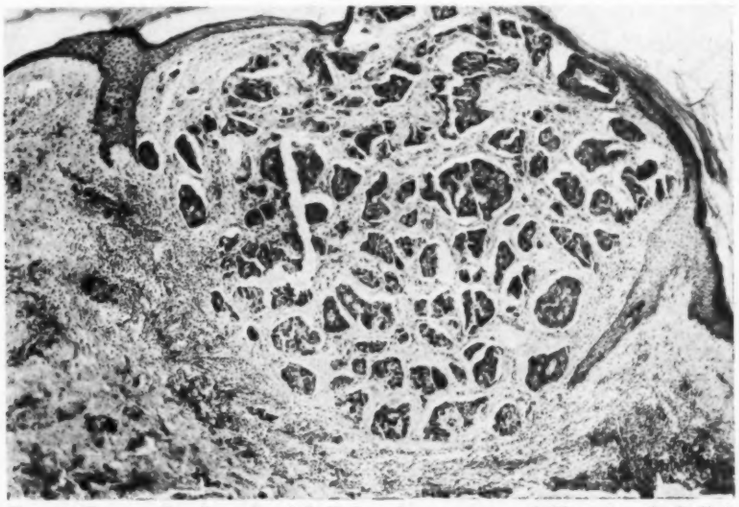

FIG. 6. Case 11. In the subepithelial region a group of dilated endothelial lined spaces filled with masses of cancer cells may be seen.

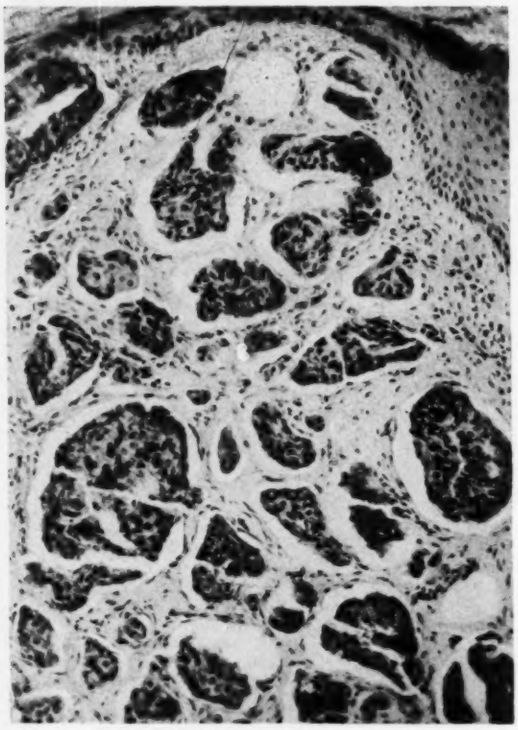

Fig. 7. Case 11. This is a higher magnification of an area shown in the preceding figure.

sion of the subepithelial vascular system with neoplastic cell masses.

In the condition variously described as inflammatory, acute or erysipeloid breast cancer, there is interference with the return flow of lymph from the integument caused by cancer cells in the lymphatic channels. This stasis induces an inflammatory reaction in the adjacent tissues which imparts to the skin the characteristic red color.

In the condition described as carcinoma eburnée, it appears that the cancer cells reach the subepidermal region by permeation through the lymph channels. The neoplastic cells then pass through the walls of the lymph vessels to propagate in the tissue spaces; thus, they form a continuous sheet of cancer cells extending beneath the skin in a plane parallel with it.

The vesicular and cystic lesions probably result from the occlusion and consequent dilatation of the superficial lymphatics by large masses of tumor cells. The cancer cells in the center of the cluster undergo necrosis because of their distance from the surrounding sources of nutrition. This central necrosis produces the semblance of a cyst or vesicle.

The telangiectatic and hemorrhagic lesions are probably the result of a mechanism similar to that just described except that the venous capillaries, instead of the lymphatics, are involved. Masses of cancer cells obstruct the capillary return flow. The trapped erythrocytes produce dilatation of the blood channels, with the resultant formation of hemorrhagic vesicles containing cancer cells, or an area of telangiectasis in which the dilated vessels are engorged with cancer and red blood cells. This would explain the gross and microscopic pictures in our first case. In the second case only dilated endothelial lined spaces containing cancer cells were seen on histologic examination. The absence of blood leads one to the conclusion that these are lymphatic channels. Undoubtedly, both lymphatic and venous capillaries were involved in this case but the biopsy was probably taken from a non-pigmented or lymphatic lesion.

The various cutaneous manifestations just described are apparently the result of metastasis from an associated breast carcinoma. We concur with the opinion of Dawson and Shaw[4] that there seems to be little justification for considering these various phenomena associated with mammary carcinoma as distinct pathologic entities. Fischer[6] has proposed the term subepidermoid breast carcinoma to describe this group of cases. We suggest that this group of metastatic phenomena be known by an appelation which acknowledges their common etiology, namely, as metastatic cutaneous manifestations of breast carcinoma.

SUMMARY AND CONCLUSIONS

1. The phenomenon of cutaneous metastatis secondary to breast cancer has been briefly described.

2. A number of unusual examples of this manifestation have been collected from the literature.

3. Two cases exhibiting hemorrhagic vesicular-like lesions are reported.

4. A theory is proposed to account for the various cutaneous manifestations discussed.

5. It is suggested that these apparently diverse skin phenomena be grouped under the generic title of metastatic cutaneous manifestations of breast carcinoma.

REFERENCES

1. Alibert, M. Monographie des Dermatoses. Vol. 2 p. 169. Paris, 1835. J. B. Bailliere.
2. Billroth, C. *Jabresb. u. Arb. d. cbir. Klin. zu Wien.*, 257–60, 1879.
3. Buday. Quoted by Nix, W.[11]
4. Dawson, E. and Shaw, J. Mammary carcinoma with generalized telangiectatic carcinoma. *Brit. J. Surg.*, 25: 100, 1937.
5. Freeman, C. and Lynch, F. Carcinoma of the. breast with peculiar cutaneous metastases. *Arcb. Dermat. & Sypb;* 35: 643, 1937.
6. Fischer, H. Das subepidermoidale Mammakarzinom. *München. med. Wcbnscbr.*, 78: 497, 1931.
7. Kuettner, H. Beitrage zur Pathologie des Mamma Carcinoms. *Beitr. z. klin. Cbir.*, 131: 7, 1927.
8. Lee, B. and Tannenbaum, N. Inflammatory carcinoma of the breast. *Surg., Gynec. & Obst.*, 39: 580, 1924.
9. Nanta, A. and Salvador. Angio-epitheliomatose cutanée. *Bull. Soc. franc. de dermat. et sypb.*, 42: 653, 1935.
10. Newcomb, W. Unusual cutaneous metastasis in carcinoma of the breast. *Lancet*, 1: 1056, 1924.
11. Nix, W. Uber Karzinomatose Hautmetastasen unter dem Bilde eines Hemolymphangiomes. *Dermat. Wcbnscbr.*, 97: 1551, 1933.
12. Redlich. Quoted by Nix, W.[11]
13. Rodman, W. Acute carcinoma of the breast. *Ann. Surg.*, 49: 150, 1909.
14. Schriner, K. and Volavsek, W. Uber das Carcine eburnée Alibert. *Arcb. f. Dermat. u. Sypb.*, 174: 22, 1936.
15. Volkman, R. von. *Beitr. z. Cbir.* Pp. 319–334. 1875.
16. Van Vonno, N. A case of carcinoma telangiectaticum. *Brit. J. Dermat.*, 45: 423, 1933.
17. Weber, F. Bilateral thoracic zosteroid spreading marginate telangiectasis. *Brit. J. Dermat.*, 45: 418, 1933.

Pain in the chest may be due to metastasis in the pleura from carcinoma of the uterus, breast, or other organs, pleural effusion or hemothorax may be due to metastasis in the pleura or mediastinum

From "Metastases Medical and Surgical" by Malford W. Thewlis (Charlotte Medical Press).

SPONTANEOUS AMPUTATION OF THE FALLOPIAN TUBE

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TORSION of the fallopian tube has come to be recognized as a definite disease entity. Apparently Bland Sutton[10] reported the first surgical case of torsion of the fallopian tube in 1890. Anspach,[2] in 1912, collected data on more than eighty cases of torsion of the fallopian tube, the majority of which were associated with an enlargement of the tube. Since then, rarely a year has passed in which additional cases of torsion of the fallopian tube have not been reported in the literature. In the majority of cases, there have been associated pelvic pathologic findings.

Blum and Sayre[4] stated that Stark in 1911 reported the first case of torsion of the normal adnexa in a virgin. Blum and Sayre listed nineteen cases, reported between 1913 and 1937, as being cases representing torsion of the undiseased fallopian tube in virgins and gave a résumé of data on these cases. They referred to additional cases reported by Stark in 1911, Norris in 1911, Cassidy and Norbury in 1911 and one other by Auvray in 1912 thus making a total of twenty-three cases which they accepted as being torsion of the normal tube.

There is a discrepancy among various authors reviewing this subject as to the total number of cases of normal tubes that have undergone torsion. This is a result of variation in interpretation among authors as to what the pathologic status of the tube was initially, for, as is readily recognized, torsion produces pathologic changes in the tube and it is difficult to establish the true state of the fallopian tube before torsion occurred. Regardless of the lack of agreement, one is forced to the conclusion that torsion of a normal tube has come to be recognized as a definite entity and that it has been observed by a number of writers since 1911 when it was first reported.

The most discussed aspect of the cases of torsion or amputation of the adnexa has been the mechanism of formation of the lesion. This problem has been debated back and forth since as long ago as 1860 when von Rokitansky[9] stated that torsion of the adnexa could be attributed to the presence of an ovarian enlargement, to constriction of the tube by pseudomembranes that result from intrauterine or extra-uterine inflammation or to strangulation of the tubes and ovaries by axial rotation. Other explanations that have been advanced have been reviewed by Blum and Sayre[4] and also by Thorek.[11] They mentioned the hemodynamic hypothesis of Payr based on the fact that veins of the mesosalpinx are longer and more flexible than the arteries thus predisposing to torsion in cases of venous congestion of the mesosalpinx. They noted Sellheim's hypothesis that sudden stoppage of certain movements of the internal organs may induce axial torsion. They mentioned the likelihood of an abnormally mobile mesosalpinx contributing toward torsion especially if associated with other congenital abnormalities. This is called the anatomic hypothesis. They noted the possibility of vulvovaginitis in childhood associated with secondary pelvic inflammatory reactions being another etiologic factor. Other etiologic factors were mentioned as being ovarian cysts, pelvic inflammatory disease and enlargements of the tube.

Thorek stated that torsion occurs three times more frequently on the right than on the left side. He stated that Gabe believed this may be explained because of the presence of the sigmoid on the left side.

In 1943, Barrett and Lash[3] reported a case of spontaneous amputation of the left, normal fallopian tube accompanied by a right ovarian cyst in a forty year old pa-

tient. They referred to Ogórek's[6,7] two cases in which there were associated pelvic pathologic changes. Ogórek[6] reviewed the literature up to 1914; in 1900, Ries[8] reported a thirty-two year old woman who had a normal full term pregnancy and delivery as well as having had two miscarriages. He found the stumps of both tubes and a hematosalpinx in the amputated portion of the right tube but he was unable to identify the remaining portion of the detached left tube. This operation was conducted vaginally. In 1900, Noble[5] reported a spontaneous amputation of the right tube and ovary with parasitic attachment of the ovarian segment to the mesentery in a forty year old Negro woman. A cyst the size of a coconut was removed from the left side of the pelvis. This was reported to have been a cystoma. Barrett and Lash mentioned that cases of spontaneous amputation of the tube had been reported by Kaufmann, Kadygrobow and Pulvirenti.

The only additional case that we have been able to discover in the literature is that of Anderson[1] who reported a case in which the patient was a twelve year old child who was found to have a detached segment of the left tube, the size of a small grapefruit, which was filled with hemorrhagic contents. The proximal stump was 1.5 cm. in length and was sealed over.

We wish to report two cases in which spontaneous amputation of the left fallopian tube occurred.

CASE REPORTS

Case 1. The patient was a twenty-eight year old unmarried woman, admitted to the Mayo Clinic on January 11, 1946. She complained of recurrent attacks of pain in the left lower quadrant of the abdomen that had been occurring over a period of the preceding four years. Four years before her admission, she had experienced a sudden onset of severe pain in the left lower quadrant which persisted for forty-eight hours. This pain gradually subsided but left a residual tenderness that was made more noticeable by walking. The following four months she experienced an attack of severe pain in the left lower quadrant weekly, lasting from four to five hours. At the end of four months an unusually severe attack confined her to bed five days and opiates were required to give her relief from the pain. At no time did an elevation of temperature develop. The frequency of the attacks of pain had subsided during the two years prior to her admission and she had experienced an attack but once a month which confined her to bed twenty-four to thirty-six hours. These attacks were in no way associated with the menstrual cycle. At times she would be awakened in the middle of the night with an onset of acute pain. During these two years the menstrual flow had increased from five to ten days in duration and she noted an increase of the daily menstrual flow. There was no dysmenorrhea and there was no history of a vaginal discharge. She had very definitely observed that vigorous physical activity, such as running and heavy lifting, would precipitate and attack of pain. She gave a history of having had pertussis and mumps as a child. She had not experienced any other illness. Menstrual periods began at the age of fifteen years; they were regular, occurring every twenty-eight days, and were of the normal type.

The patient was 65 inches (165 cm.) tall and weighed 125 pounds (56.7 Kg.). The pulse rate was 92 and the temperature was 98.6°F. The systolic blood pressure was 142 and the diastolic 90 mm. of mercury. A physical examination revealed the patient to be a normal nullipara. The pelvic examination revealed a small cystic mass in the region of the left ovary which was slightly tender to palpation. Urinalysis for albumin, sugar, bacteria and microscopic cellular structures was reported as negative. The concentration of hemoglobin was 14.0 Gm. per 100 cc. of blood. Leukocytes numbered 6,800 per cu. mm. of blood. The Kline test for syphilis gave negative results. A roentgenogram of the thorax was negative. The sedimentation rate was reported to be 8 mm. per hour (Westergren). In view of the attacks of pain and the cystic enlargement in the left adnexa, it was thought advisable to conduct abdominal exploration.

Abdominal exploration was carried out on January 17, 1946, through a low midline incision while the patient was under nitrous oxide, oxygen, carbon dioxide and ether anesthesia. The uterus, the right tube and ovary and the left ovary were normal to examination

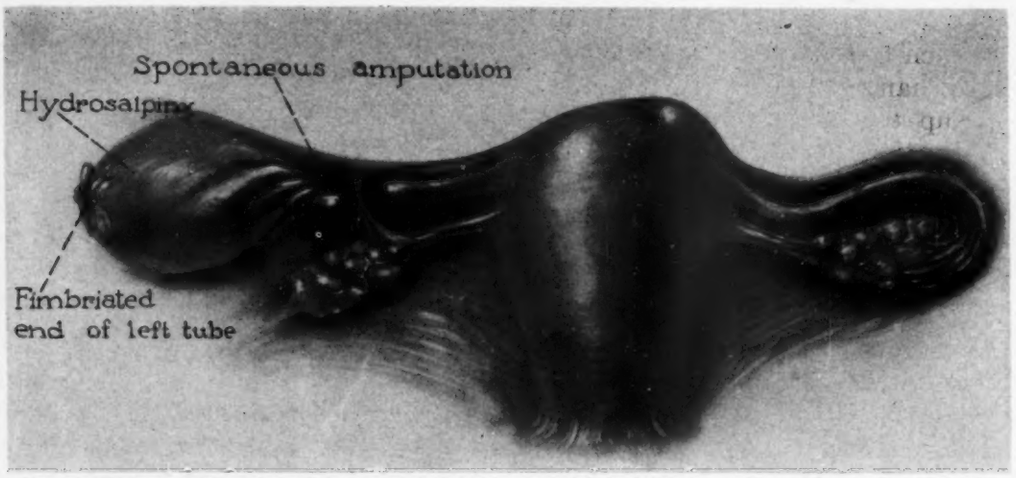

Fig. 1. The condition found at operation: amputated left fallopian tube and associated hydrosalpinx of distal segment.

except for two uterine fibromyomas 1 cm. and 0.5 cm. in diameter which were removed by myomectomy. The left fallopian tube had undergone spontaneous amputation and was found to be in two portions. (Fig. 1.) There was one complete twist of the pedicle of the distal half of the left tube. This segment was found to have the fimbriated end sealed over and a hydrosalpinx 7.5 by 2 by 1.5 cm. had formed. This segment of tube was removed. The left ovary was not involved in any manner. There appeared to be a band of adhesions that had extended across the left side of the pelvis in the region of the amputation. This remained as a thickened peritoneal fold. The proximal half of the fallopian tube had sealed over. We attempted a plastic procedure on the sealed end of this segment of tube by bringing mucous membrane over the muscularis layer. We then inserted a piece of chromic catgut through the lumen of the tube into the uterine cavity with the hope that this would prevent the new ostium of the tube from sealing over. The appendix was removed secondarily and the stump inverted. The abdomen was closed with a layer of single continuous chromic catgut No. 1 in the pertioneum and a layer of double continuous chromic catgut in the fascia.

The pathologist reported a hypertrophic endometrium. The appendix showed chronic catarrhal appendicitis.

The patient was dismissed from the hospital on the thirteenth postoperative day and was allowed to return to her home the twenty-fifth postoperative day with the incision well healed.

Case II. The patient was a twenty-one year old unmarried woman, admitted to the clinic March 4, 1922. She complained of severe recurrent attacks of pain in the right lower quadrant of the abdomen that had occurred over a period of twelve months prior to her admission. On three occasions the pain was so severe that the patient collapsed. During the two weeks prior to her admission the pain in the right lower quadrant had recurred and had gradually increased in intensity. She was able to obtain slight relief by flexing the right thigh on the abdomen. She had noted a marked yellow leukorrhea for a period of one year. She gave a history of having had scarlet fever at the age of four years and influenza in 1918. There were no other previous illnesses. Her menstrual periods began at the age of twelve years; they were always irregular, every two to three weeks, and lasted for six or seven days.

The patient weighed 127 pounds (57.6 Kg.), her pulse rate was 110 and her temperature 98.6°F. The systolic blood pressure was 118 and the diastolic 82 mm. of mercury. Her physical examination, other than that related to the abdomen and pelvis, did not give remarkable results. The right lower quadrant of the abdomen was markedly tender and definitely rigid. Pelvic examination revealed a very tender mass in the region of the right adnexa. A roentgenogram of the thorax was negative, the leukocytes numbered 10,300 per cu. mm. of blood and the Wassermann reaction was negative.

On March 9, 1922, Dr. C. H. Mayo explored the abdomen through a low midline incision while the patient was under ether anesthesia.

He stated that the uterus was slightly enlarged and fixed to the right side of the pelvis. There were many adhesions between the sigmoid and the left ovary. The left fallopian tube had undergone spontaneous amputation and the proximal portion of the tube had sealed over forming a blind stump. The fimbriated end was free and open and measured 1½ inches (3.8 cm.) long. There was no evidence of infection of the tube. The right tube was dilated and showed chronic salpingitis and the fimbriated end was sealed over. The right tube and the appendix were removed. The pathologist reported the right tube to show evidence of chronic salpingitis. The appendix showed chronic appendicitis with obliteration of the tip. The patient was dismissed from the hospital the twelfth postoperative day with the incision well healed.

COMMENT

Spontaneous amputation of the fallopian tube may be the result of any one of several etiologic factors. It appears probable that torsion of a segment of a fallopian tube on an unusually long mesosalpinx could frequently be considered an etiologic factor particularly when associated with adnexal pathologic changes and segmental enlargement of the tube. Old inflammatory peritoneal bands that have formed as a result of previous vulvovaginitis, a ruptured appendix or other types of pelvic peritonitis may be the factor involved in another group of cases.

It is difficult to attempt a reconstruction of the exact pathologic processes involved in the two cases presented. In the first case there was hydrosalpinx of the amputated segment. In addition, there was a complete twist of the pedicle of the mesosalpinx associated with a peritoneal band at the site of the amputation. Inasmuch as there was no evidence of additional pelvic disease, we are inclined to explain the amputation on a basis of torsion. Whether the hydrosalpinx was primary or secondary is a question that must remain unanswered in this case. The second case is an example of amputation of a tube that appeared normal in all respects. The fimbriated end of the amputated segment had remained open; however, there was extensive evidence of pelvic inflammatory disease in the other adnexal structures. An inflammatory band of adhesions may have been the etiologic factor in this case.

Cases of spontaneous amputation of the fallopian tube are gynecologic curiosities and are so unusual that the reporting of these two cases appears justifiable.

REFERENCES

1. Anderson, H. F. Torsion of apparently normal ovary, and spontaneous amputation of fallopian tube during adolescence. *Am. J. Obst. & Gynec.*, 49: 283–284, 1945.
2. Anspach. Quoted by Thorek, Max.
3. Barrett, C. W. and Lash, A. F. Spontaneous amputation and subsequent acute torsion of the normal left fallopian tube and fibroma of the right ovary. *West. J. Surg.*, 51: 135–139, 1943.
4. Blum, L. L. and Sayre, B. E. Torsion of the fallopian tube in the virgin; report of a case and review of the literature. *Arch. Surg.*, 34: 1032–1048, 1937.
5. Noble, G. H. Spontaneous amputation of tube and ovary. *Am. J. Obst.*, 42: 367–369, 1900.
6. Ogórek, M. Spontanabtrennungen der weiblichen Adnexe. *Arch. f. Gynäk.*, 102: 300–332, 1914.
7. Ogórek, M. Ein merkwürdiger Fall von Spontantrennung der Tube und Verlagerung der Adnexe. *Arch. f. Gynäk.*, 103: 284–292, 1914.
8. Ries, E. Quoted by Barrett, C. W. and Lash, A. F.
9. von Rokitansky. Quoted by Ogórek, M.[6]
10. Sutton, J. B. Salpingitis and some of its effects. *Lancet*, 2: 1206–1209, 1890; also quoted by Blum, L. L. and Sayre, B. E.
11. Thorek, Max. Torsion of fallopian tube in a virgin. *M. Rec.*, 125: 470–473, 1927.

DYSGERMINOMA OF OVARY*

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THIS type of tumor may also be described as seminoma or embryonal carcinoma with lymphoid stroma. It is a malignant, radio sensitive, cellular tumor, occurring at rather early ages, lacking hormonal effects, is composed of large polyhedral cells of embryonal type and lies in a loose stroma containing many lymphocytes. The structure and clinical features are probably the most characteristic of any ovarian neoplasm. Pseudohermaphrodism, true hermophrodism, primary amenorrhea, infantile uterus, ovarian hypoplasia or hirsutism may coexist with this type of tumor. This tumor may also be associated with teratoma or chorioma of the ovary.

A few small tumors have been discovered but the growth is usually rapid and attains considerable or large dimensions before detection. The early tumors are encapsulated and offer a good prognosis; others have infiltrated the capsule and invaded tubes and pelvic peritoneum and in some the disease is widely spread through the pelvis, abdominal lymph nodes, liver, lungs and other organs. The prognosis varies with the extent but most of the unilateral encapsulated growths have failed to recur after operation. The gross section exhibits a solid gray surface often marked by areas of hemorrhage and necrosis.

The structure is very characteristic permitting a positive diagnosis in nearly all cases, an advantage enjoyed by few ovarian tumors. The cells are large, round or polyhedral, granular with large vesicular nuclei lying in stroma which is generally infiltrated with lymphocytes, or the cells are clear, polyhedral lying in large alveoli with stroma containing few lymphocytes or hyaline. Occasionally areas of degeneration containing giant cells and suggesting tuberculosis have been found.

The treatment of dysgerminoma has generally been surgical and with unilateral, encapsulated tumors the prognosis is good. In all other cases, which constitute the majority, surgery is ineffective. The structure is essentially radio sensitive and should respond in the ovarian tumors as it does in the testicular growths for which radiation has largely replaced surgery.

The origin of the seminoma has been assigned by Meyer to cells derived from the primitive gonad at a very early period and before sex characteristics have been imparted to them by the true sex cells. This assumption is demanded by the absence of sex properties and hormonal effects and by the occurrence of similar tumors in the testes.

CASE REPORT

On August 14, 1946, a white female of Syrian extraction, aged twenty-seven years, referred by Joseph Ganim, M.D., was admitted to the hospital complaining of abdominal distention, pulling sensation in both flanks, backache and pain radiating to both shoulders. The onset of symptoms began July 28, 1946, and all had increased gradually in intensity. The patient had been married two days prior to onset of symptoms. There was no disturbance in digestion. She was moderately constipated but this symptom was a chronic condition. There were no symptoms referrable to the urinary tract. The patient began to menstruate at thirteen years. Her periods were regular, occurring every thirty days and lasting four days. The flow was moderate and without clots. Moderate cramps occurred for four or five hours at the onset of flow. There was no history of vaginal discharge. The patient had the usual childhood diseases and had always enjoyed rather good health.

The patient was one of eight children (two

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boys and six girls), all living and well. Her father had died at fifty-one years of cerebral hemorrhage; the mother, forty-nine years, was living and well.

On physical examination the patient was found to be a well nourished and well developed, slightly obese, white female, with physical findings confined entirely to the abdomen. The latter was uniformly enlarged. The umbilicus was concave. The superficial veins were slightly prominent. No operative scars were present. Dullness was obtained in both flanks. No definite fluid wave could be ascertained. On pelvic examination the cul-de-sac was distended and bulging uniformly. A tumor mass could be palpated on bimanual examination. This mass seemed to be attached to the right adnexa.

On admission the temperature was 98°F., pulse 108, respirations 20, and blood pressure 120/90.

The following laboratory data were reported: Urine, color, cloudy straw; reaction, alkaline; specific gravity, 1.020; negative for albumin, sugar, acetone and diacetic acid. The microscopic showed that the urine was packed with amorphous phosphates. Blood count: red blood cells, 5,070,000; white blood cells, 7,150; hemoglobin, 100 per cent; hemogram, 100 cc., 14.5; polymorphonuclears, 58 per cent; lymphocytes, 27 per cent; large monocytes, 10 per cent; eosinophils, 5 per cent; stabs, 18 per cent; shift, 31 per cent. The Freidman and Kahn tests were negative. On a flat x-ray plate of the abdomen the left kidney and left psoas shadow were visualized. The right kidney and right psoas shadow were not visualized. The bladder was seen and there was no calculus. There was a suggestion of fluid in the abdomen.

On August 21, 1946, an exploratory laparotomy was performed through a mid-line suprapubic incision. On opening the abdomen, approximately 10 liters of serosanguineous fluid was aspirated. The pelvic viscera were examined and a tumor replacing the right ovary was found. This tumor was encapsulated and measured 16 cm. in diameter. There were several rents in the capsule which accounted for the ascitic fluid. The mass had a white appearance and was spongy in character. It was adherent to the left tube and ovary as a result of inflammatory reaction. The right tube and ovary were removed. The uterus, left tube and ovary were normal in appearance and were left *in situ*. There were several small masses attached to the pelvic peritoneum and were considered transplants. These were also removed by simple excision.

The patient had an uneventful postoperative course and was permitted out of bed on the tenth day, at which time deep x-ray therapy was instituted. The patient will receive during a six- to eight-week period, 4,000 r to the abdomen with equal distribution to anterior and posterior surfaces. The x-ray therapy is given to two fields on the anterior surface and two fields on the posterior surface. The fields measure 10 by 20 cm. The distance is 80 cm. and 200 KV are used. The filtration is through 1 mm. of aluminum and 1 mm. of copper.

The pathologic report is as follows: Macroscopic: The ovarian tumor and fallopian tube weighed 910 Gm. The fallopian tube measured 12 cm. by 5 mm. and was not remarkable. The cyst measured 16 cm. in diameter and contained a soft, white, spongy tissue. One area 5 mm. in diameter was entirely cystic and contained a clear amber fluid. Microscopic: The fallopian tube showed no significant lesions other than adhesions. The ovarian sections showed a solid tumor of ovary with abundant blood supply and occasional small areas of necrosis. The entire mass was composed of small ovoid and spherical cells of uniform diameter supported by a connective tissue framework in which there were numerous aggregations of very small cells resembling lymphocytes. Mitoses were not infrequent. There was more evidence of growth than is usually present in this type of neoplasm. The dual cell type and other characteristics are typical of dysgerminoma of ovary.

Diagnosis: Dysgerminoma.

The patient was discharged from the hospital on September 11, 1946, and continued x-ray therapy on an out-patient basis.

SUMMARY

A case of dysgerminoma of the right ovary is reported in a twenty-seven year old white female, who had been in good health until two weeks before entry into the hospital, with the symptoms of abdominal distention, pulling sensation in both flanks, backache and pain radiating to both shoulders.

CESAREAN SECTION SEVEN YEARS AFTER HEMIHYSTERECTOMY IN A BICORNATE UTERUS*

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Columbus, Ohio

EMBRYOLOGICALLY, in the female the Müllerian ducts become converted into tubes, uterus and vagina below. At the abdominal ostium of the tube, projections develop at an early period and form the fimbriae. If there is failure in the development in a normal manner of the parts just described. it will lead to various abnormalities in the organs of reproduction. There may be aplasia resulting in absence of tubes, uterus or vagina or there may be inhibition in their proper development resulting in the various types of malformed uteri.

Since there are numerous classifications, we will mention the Kaufman modification types. He describes the didelphys or double uteri in which there are two separate tubes, uteri, cervices and a double vagina. These cases are rarely encountered. The uterus duplex bicornis has the uteri joined externally but there are two distinct uterine cavities. (Fig. 1.) The two cervices are also joined while the vagina may be double or possess only a septum in the upper portion of the vagina.

The uterus septum shows evidence of deformity by a depression in the fundus; the septum in the uterus may be complete or incomplete. The uterus cordiformis or arcuratus is heart-shaped and the cleft in the upper portion should remind us of a possible intrauterine septum.

The uterus bicornis unicollis (Figs. 2 and 3) develops when fusion is only complete to a point above the cervix. The uterus is usually widely bicornuate with one cervix and one vagina.

Occasionally, we find that one uterine cavity alone communicates with the cervical canal. This condition may not manifest itself at the age of puberty when menstruation is established because menstrual periods may be normal. However, in a period of months the patient will develop pelvic distress due to a hematometria forming in the uterus with the atresia of the cervical canal. The uterus will enlarge and a pelvic tumor will be formed. Because of a large pelvic tumor, a diagnosis of ovarian cyst was made in the first of the two cases that we have encountered. This diagnosis proved incorrect. The patient had a normal vagina and an apparently normal cervix. When the abdomen was opened we found a large tumor which consisted of the right half of a bicornuate uterus with hematometria and a large irregular tube filled with menstrum or a hematosalpinx. In this case a total hysterectomy and bilateral salpingectomy was performed. The patient made a normal recovery.

In the case that we wish to present in detail it is important to note that a previous drainage had been established through the rectum and into the left uterine cavity. This was followed by a severe infection with pelvic peritonitis. In searching the literature we were unable to find a case in which a hemihysterectomy had been performed in a uterus bicornis unicollis such as we wish to present. (Fig. 4.) We are reporting the following case because it is unique and it adds another indication to the regular list for cesarean section:

CASE REPORT

Mrs. C. first came under our observation on January 11, 1935, at which time I saw her in consultation with a rectal specialist. The patient was a female, thirteen years of age. She

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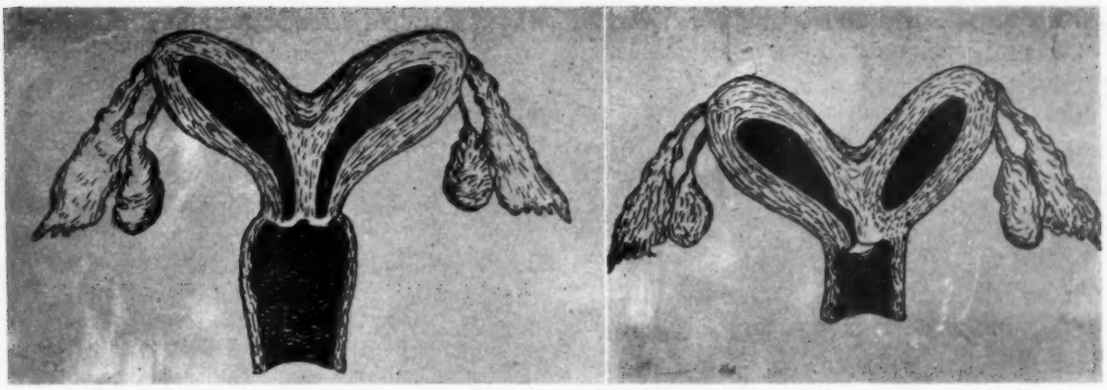

1 2

Fig. 1. Uterus duplex bicornis, double uterus; two uterine cavities communicating with vagina via two cervical canals; found in hare, squirrel and beaver.

Fig. 2. Uterus bicornis unicollis; drawing shows one uterine cavity communicating with vagina; atresia of left side with no cervical communication; the normal uterus bicornis unicollis is found in the dog, sheep, goat and hyena.

gave a history of having had the usual diseases of childhood but no severe illnesses and no injuries. The onset of her menstruation at the age of twelve years was unusual. It began in September, 1934, and she had only two periods up until we first saw her on January 27, 1935. She stated that in November, 1934, she had difficulty of some kind with her bowels. Constipation was marked and she suffered pain in the rectum when her bowels moved. She apparently improved the bowel condition by using large doses of laxatives. However, on January 9, 1935, the rectal trouble returned and the pain in the rectum became continuous and severe. Her family physician gave her medical care and when she failed to improve, he sent her to White Cross Hospital where she was examined by a rectal specialist. At that time an examination revealed a temperature of 103°F., a pulse of 120 and respiration rate of 28 per minute. The erythrocytes were 4,900,000, hemoglobin 95 per cent and the leukocyte count was 16,500 with polymorphonuclears 91 per cent.

The only important finding, as noted by the rectal surgeon, was a large tender mass in the anterior wall of the rectum which was extremely tender to digital examination. Diagnosis of a rectal abscess was made and the patient was taken to surgery. I was called in consultation and upon arrival at the operating table, the rectal surgeon informed me that the patient had a rectal abscess which he

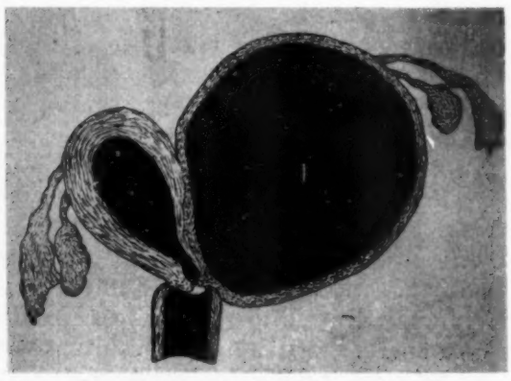

Fig. 3. Uterus bicornis unicollis; same as Figure 2 after puberty, with accumulation of menstrum-hematometria.

Fig. 4. This shows the remaining right half of the bicornate uterus unicollis after a hemi-hysterectomy had been performed. It was from this remaining uterine body that a fetus was delivered by cesarean section.

wished to incise for drainage and that it would be unnecessary for me to make an examination. He inserted the point of a scissors into the bulging mass which was followed by a gush of dark brownish menstrual fluid. It was a coincidence that we had another patient in the hospital at this same time that had a uterus bicornis unicollis with an atresia of the right cervix resulting in a hematometria, hematosalpinx and hematoperitoneum. A panhysterectomy had been performed on this patient and my recent observation of the menstrum associated with her abnormality led us to a proper diagnosis, in this case, in the operating room. After noting the fluid gushing from the patient's rectum, we made the diagnosis. The rectal surgeon recognizing the condition present, asked me to assume further care of the patient. The incisional area became infected and the patient was given supportive treatment until January 23rd, when she was permitted to return to her home in order to improve her condition in preparation for abdominal surgery. The patient left the hospital on January 23, 1935. The elevation of temperature was persistent during her hospital stay and it continued until she was readmitted on January 27, 1935, at which time it was 102°F. and the pulse ranged from 100 to 120 per minute. Her erythrocyte count at this time was 3,500,000 and hemoglobin 80 per cent. The leukocyte count was 9,250 with 48 per cent neutrophiles, 50 per cent lymphocytes and 2 per cent eosinophiles. The urinalysis showed 140 mg. of albumin, leukocytes, erythrocytes and hyalin casts.

The patient was prepared for surgery and an operation was performed for a double uterus with occlusion of the left side, resulting in hematometria. Under nitrous oxide-ether anesthesia, we proceeded with the operation making a paramedian incision. The left half of the uterus with tube and ovary was removed. Drainage was established through the vagina and also through the abdominal incision. Loaded penrose drains were used. The abdominal incision was then closed.

The operative findings were as follows: "Upon opening the abdominal cavity we found a large mass filling the pelvic cavity. This consisted of a uterus bicornis unicollis. The left side comprising most of the mass was swollen, inflamatory and covered by a grayish plastic exudate. It was dark in color upon section and the cavity had a moderate amount of purulent material with a marked colon odor. The tube and ovary were congested, otherwise not unusual."

Dr. Scott reported the pathologic laboratory findings as follows: "The specimen consists of what apparently is a portion of a uterus; the entire specimen measuring 5 by 4 by 3½ cm. The specimen has been opened before reaching the laboratory and upon further opening the portion corresponding to the endometrial cavity, we find it filled with coagulated hemorrhagic material originating on a basal layer of thin tissue which is not grossly characteristic. Beneath this layer the tissue is characteristically myometrial in type and measures 8 by 10 mm. in thickness.

"Microscopic sections from the specimen show it to be uterine muscle which is somewhat edematous but otherwise not noteworthy. The surface corresponding to the endometrial side is superficially covered with hemorrhagic material, but there is no evidence of endometrium.

"Diagnosis: Accessory uterus."

Following the operation the patient apparently made an uneventful recovery. She left the hospital on February 16, 1935. Her menstrual cycle became established and her periods were regular, every twenty-eight days. Her health improved and she seemed quite well until January, 1942, when she developed an abscess in the left vault of the vagina. She entered the hospital on January 13, 1942. On January 15, 1942, we opened the vaginal abscess and established drainage. The area healed in about three weeks and her health was again normal.

The patient came to my office on June 2, 1942, and told me she had not menstruated for about three months. Pelvic examination revealed an enlarged uterus with softening of the cervix. The Aschheim-Zondek test was positive. Because of her previous pelvic operation she insisted on having an abortion performed because she was afraid of uterine rupture. With some difficulty, we persuaded her to continue with the pregnancy until the fetus would be viable; then the process might be terminated by cesarean section. To this she assented. Again Mrs. C. was admitted to White Cross Hospital on November 11, 1942. After consulting with Dr. W. D. Inglis, Chief of the Obstetrical Staff, a cesarean operation was performed on November 14, 1942.

A right paramedian incision was made and two abdominal sponges were placed around the uterus. The uterus was opened and a male child weighing four and one-half pounds was delivered. The placenta was removed and the uterine cavity was swabbed with iodine. The uterine wall was closed with two continuous sutures of No. 1 chromic catgut. Sulfathiazole (10 Gm.) was dusted over the uterine incision. The right tube was side-stepped for sterilization purposes and the abdomen was closed. The patient made an uneventful recovery and the baby was normal in all respects with the exception of being rather underweight. With careful nursing and incubator care, the child developed in a normal manner. The child is now nearly 5 years of age and is normal physically and mentally. The mother is in excellent health.

The pregnancy and cesarean section followed after a hemihysterectomy had been performed. Because of the operation, the remaining uterus was abnormal due to the fact that the wall on the left side was thin at the point where the left uterus was excised from it. At operation the thinness of the left side of the uterus was definitely noted. This patient was not permitted to go into labor because of the danger of rupturing the uterus.

On account of the severe infection and the poor surgical risk, we did not perform a panhysterectomy but removed only the left half of the uterus.

The size of the fetus at birth, which was four and one-half pounds, was obviously due to the lack of circulation to the uterus and placenta. She had only one uterine artery to supply the remaining uterus and fetus. Investigation of double uterus has shown that there is usually an associated widening of the pelvis. However, in this case the patient was normal, weighing 120 pounds and the pelvic measurments are normal.

We advised against pregnancy, but as usual the patient became pregnant soon after marriage.

HYPERPARATHYROIDISM AND PREGNANCY*

CAPTAIN DONALD W. PETIT AND LIEUT. COL. RANDOLPH LEE CLARK
Medical Corps, Army of the United States

HYPERPARATHYROIDISM is a well known metabolic disturbance whose various manifestations have been adequately described in numerous reviews.[1,2,3] The occurrence of this disease during pregnancy, however, has been reported but rarely. Spingarn and Geist[4] have described one case and have, in addition, collected six other cases in which the occurrence of hyperparathyroidism and pregnancy may have been concurrent.

The patient of Spingarn and Geist was a twenty-nine year old woman who, at the time of her pregnancy, had had a well authenticated history of hyperparathyroidism for the preceding ten years. During this time, she had undergone one fruitless exploration of her neck and had suffered from numerous spontaneous fractures and renal calculi. At the time of her pregnancy she was described as "thin" and "chronically ill." The authors stated that a second exploration of her neck was considered inadvisable owing to the possibility of precipitating a severe tetany with resultant danger to both mother and fetus. Because of her poor general condition, it was considered necessary to terminate her pregnancy at the fourth month. The fetus was autopsied and was found to have normally developing osseous centers, bone structure and fetal parathyroids.

Two of the other cases reported by Spingarn and Geist are worthy of comment. One[5] was a thirty-two year old Italian woman who survived her tenth, eleventh and twelfth pregnancies while practically bedridden with hyperparathyroidism. The eleventh infant was stillborn but the tenth and twelfth were normal in spite of extensive, incapacitating skeletal changes in the mother. No data were given concerning abnormalities of calcium metabolism in either of the surviving infants.

A second case[6] involved the occurrence of tetany in a five months old infant whose mother was found to have hyperparathyroidism. It was stated that the mother's hyperparathyroidism had hampered the development of the fetal parathyroids. The infant's hypocalcemia resisted the action of vitamin D and calcium by mouth. In most respects, the baby described resembled other reported cases of tetany of the newborn[7] in which resistance to the action of vitamin D has been noted.

The case history detailed below is thought to be unique in that it reports the successful surgical treatment of hyperparathyroidism in a pregnant woman with subsequent delivery of an apparently normal infant.

CASE REPORT*

CASE No. 34455. A twenty-three year old nullipara entered the hospital on May 9, 1945, complaining of the recent enlargement of a mass that had been present on her chin for the past five and one-half months. This mass had been noticed first as a small, non-painful, hard lump, which had remained stationary in size until one month before her present admission, at which time it enlarged rapidly and painlessly.

Her past history revealed that she had been aware of a small lump in her neck for the past four years and had at one time taken "iodine drops" because of this lump. There were no other relevant data other than the fact that her last menstrual period was in December, 1944.

The patient appeared alert and in good health. The blood pressure was 126 mm. mercury systolic and 76 mm. mercury diastolic. There was a hard, non-tender, bulbous swelling

* The authors wish to express their appreciation to Majors John S. Bagwell, Ridings E. Lee and Captain L. P. Matthei, MC, AUS who saw this patient.

* From the Departments of Medicine and Surgery, AAF School of Aviation Medicine, Randolph Field, Texas.

at the point of her chin. (Fig. 1.) Along the left anterior side of the neck above the suprasternal notch was a firm nodule about 2.5 cm. by 2.5 cm. that moved with swallowing. There was a firm, smooth, rounded mass in the lower central abdomen; pelvic examination revealed changes compatible with a gestation of five months' duration. There was no other physical findings of importance.

The red blood count was 4,280,000; the white blood count 10,700 cells per c. mm. with 74 per cent polymorphonuclear leukocytes and 26 per cent lymphocytes. A Kahn blood test was negative. The urine contained a trace of protein. Repeated examinations failed to detect Bence-Jones protein.

The serum calcium was 19 mg. per cent, the serum inorganic phosphorus 3 mg. per cent and the serum alkaline phosphatase 4 modified Bodansky units. The serum proteins were 7 Gm. per cent and non-protein nitrogen 29 mg. per cent.

When the patient was placed on a calculated daily intake of 100 mg. of calcium and 500 mg. of phosphorus, daily studies of urinary excretion of calcium revealed a negative calcium balance. (Table 1).

Roentgenograms of the kidney region demonstrated collections of calcium granules in each kidney area. Intravenous pyelograms revealed a very poor concentration of dye in the parenchyma of the kidney. The collections of calcium were described as being in the interstitial part of the kidneys and were considered identical with those described in cases of nephrocalcinosis. A faintly calcified fetal skeleton was seen in the abdomen. (Fig. 4.) The degree of fetal calcification was thought to be normal for the period of gestation.

Because of x-ray evidence of calcification of the parenchymal tissue of her kidneys and the possibility of impaired renal function, careful consideration was given to the advisability of terminating her pregnancy. However, in consideration of her normal serum non-protein nitrogen and of the fact that this was her first pregnancy and that conditions were ideal for careful and frequent observation, it was decided to permit the pregnancy to continue and to undertake surgical exploration of her neck.

Accordingly, on June 6, 1945, under local procaine anesthesia, supplemented by nitrous oxide-oxygen, the parathyroid areas were explored. A large mass, corresponding to the tumor that had been palpable in her neck for the past four years, was readily located in the tracheo-esophageal groove on the left side just below the inferior thyroid artery. This mass which measured approximately 2.5 cm. by 3.5 cm. was encapsulated, discrete and readily removed. The tumor weighed 13 Gm. Additional exploration, including digital palpation of the superior mediastinal area, uncovered no further abnormal tissue masses. A biopsy specimen was removed from the chin and the operative sites were closed.

Histologic study of the tissues removed was

TABLE 1

	May 25	May 26	May 27	May 28	May 29	May 30
Serum Calcium	.....	.....	.....	18.75 mg. %	19 mg. %	18.1 mg. %
Serum Phosphorus	.....	.....	.....	2.9 mg. %	3.0 mg. %	2.94 mg. %
24 hr Urine Calcium	385 as CaO or 276 mg. AS Ca++	456 as CaO or 325 mg. AS Ca++	442 as CaO or 315 mg. AS Ca++	480 as CaO or 342 mg. AS Ca++	448 as CaO or 320 mg. AS Ca++	250 as CaO or 178 mg. AS Ca++
24 hr Calcium Intake in mg.	100	100	100	100	100	100
Ca++ Balance in mg.	−176	−225	−215	−242	−220	−78

Roentgenograms of the chin showed a faintly calcified soft tissue tumor that arose from a discrete area of bone destruction in the mandible slightly to the left of the mental symphysis. (Fig. 2.) Roentgenograms of other principal bones of the body demonstrated multiple destructive lesions associated with generalized decalcification of the skeleton. The destructive lesions involved the left tibia, right sacrum, right ilium, right pubic bone, right ulna, left radius, left patella (Fig. 3) and the left maxilla in addition to the previously described lesion of the mandible.

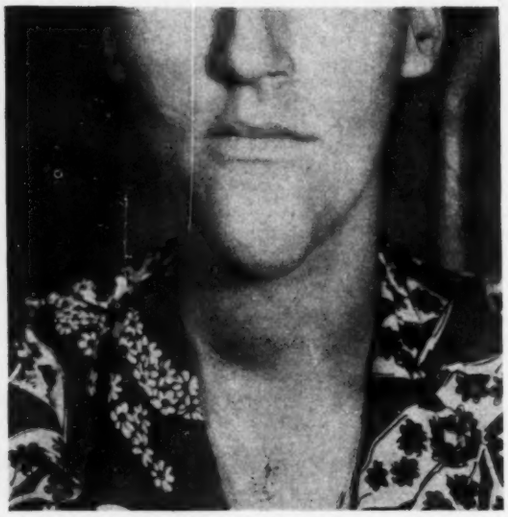

FIG. 1. Photograph of patient showing distortion of chin caused by the osteoclastoma.

FIG. 2. X-ray study of mandibular tumor, demonstrating bone destruction and a large, faintly calcified soft tissue mass.

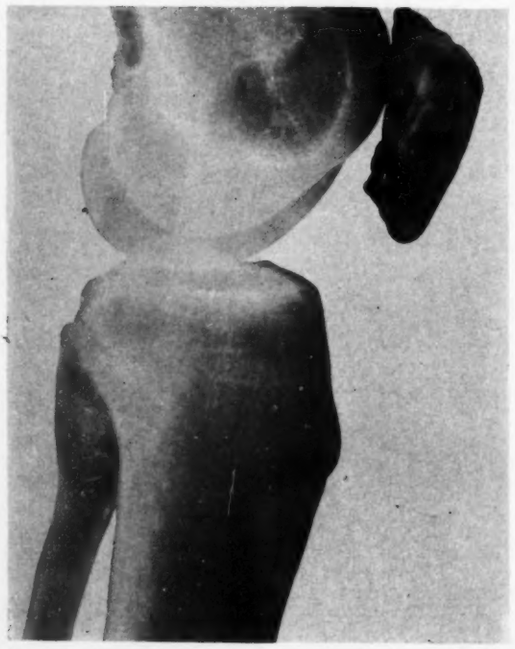

FIG. 3. X-ray study showing extensive cystic destruction of left patella.

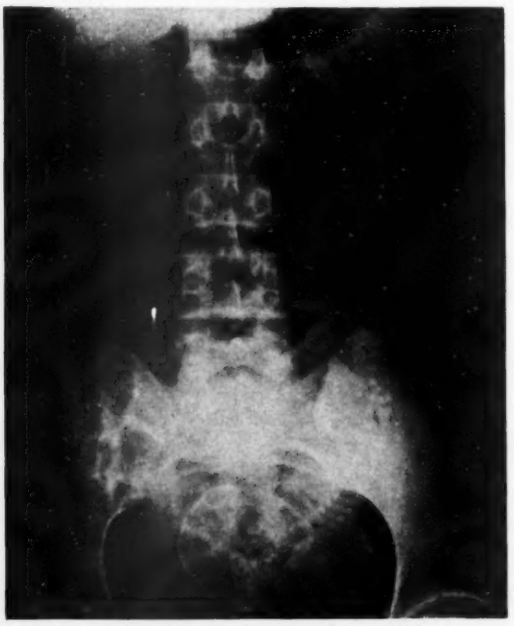

FIG. 4. Roentgenogram of abdomen showing the fetal skeleton, bilateral renal calcifications and destructive lesions of the right ilium.

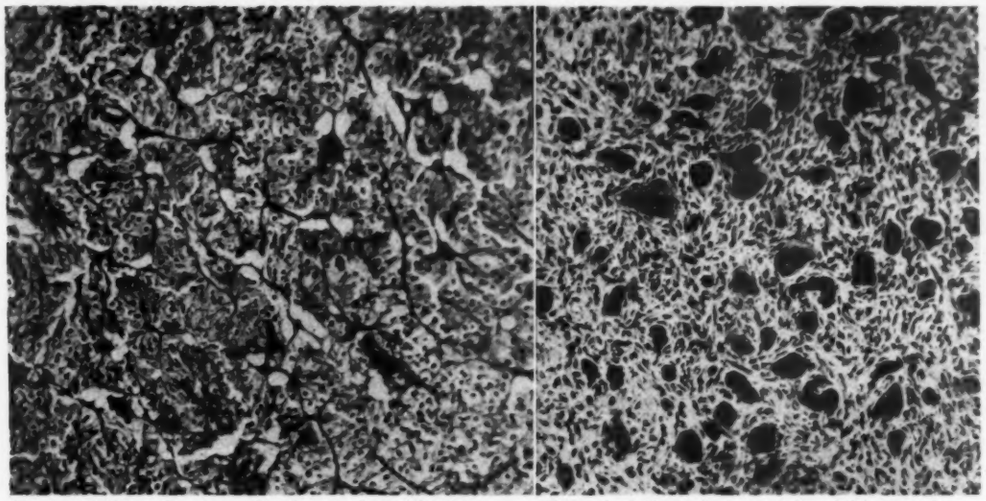

Fig. 5. Microphotograph of parathyroid adenoma. × 100.

Fig. 6. Microphotograph of biopsy from mandibular tumor showing large numbers of giant cells. × 100.

made by Major George M. Hass, M.C., whose conclusions regarding the mass removed from the neck were as follows: "The structure is essentially that of a parathyroid adenoma. It may be assumed that the patient has hyperparathyroidism. . . . No local recurrence is to be expected and with a tumor of this size, it is unlikely that there is a generalized hyperplasia of all parathyroid glands." (Fig. 5.)

His conclusions regarding the biopsy of the chin were: "The tissue is composed principally of rapidly growing fibroblasts which have deposited very little collagen and which surround large numbers of multinucleated giant

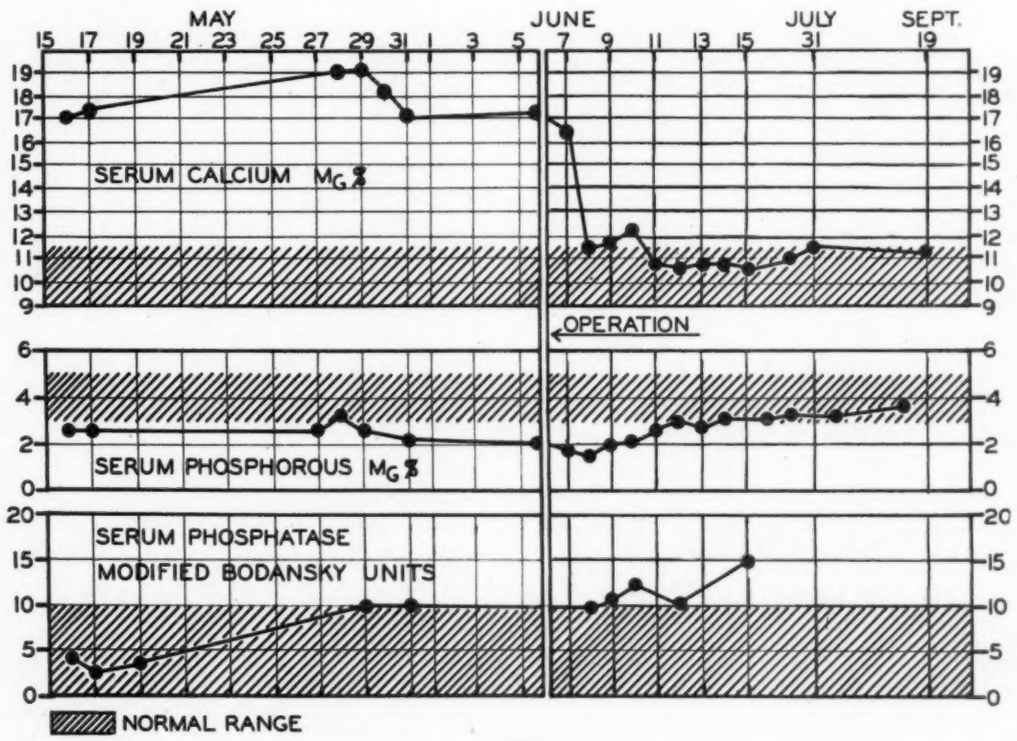

Fig. 7.

cells. There are a few small islands of osteoid tissue with evidence of formation of new bone. . . . This tumor, therefore, has the essential characteristics of a rapidly growing giant-cell tumor of bone." (Fig. 6.)

Calcium, phosphorus and phosphatase concentrations of her blood, determined at frequent intervals, revealed a rapid postoperative drop in the level of blood calcium. (Fig. 7.) Roentgenograms taken August 25, 1945, showed almost complete calcification of the soft tissue tumor of the chin and extensive recalcification of the skeleton. Cystic changes which had been prominent in the right ilium and superior ramus of the right pubic bone were largely recalcified.

The patient completed her period of gestation without further mishap and on September 15, 1945, after an uneventful, spontaneous labor, gave birth to a normal female infant weighing 7 pounds 5¾ ounces. Roentgenograms of the baby's skeleton demonstrated no bony abnormalities. The serum calcium of the infant three days after birth was 10 mg. per cent.

The post partum period of recovery was uneventful. Directly prior to discharge, the serum calcium of the mother was 11.7 mg. per cent, the serum phosphorus 3.3 mg. per cent and the non-protein nitrogen 31 mg. per cent. At this time the tumor of the chin had not receded. Suggestions for further treatment were declined.

COMMENT

The principal interest in this case is the simultaneous occurrence of two conditions, each capable of producing profound alterations in calcium and phosphorus metabolism. Pregnancy in the human is associated with normal serum phosphorus, slightly elevated serum alkaline phosphatase and depressed serum calcium levels.[8,9] Hyperparathyroidism is characterized by an increased urinary excretion of calcium and phosphorus by hypophosphatemia, hypercalcemia and, if there is skeletal involvement, by a marked increase in the serum alkaline phosphatase.[1] The signs and symptoms of the disease derive principally from the large daily loss of calcium with resultant decalcification of the skeleton. The decalcification is not confined to one or two bones although discrete radiolucent areas, which represent cysts of the giant cell type, may be seen frequently. In addition, the combination of hypercalcemia and hypercalcuria can often result in the deposition of calcium either in the renal pelvis or renal parenchyma. Accordingly, renal calculi may be the first sign of hyperparathyroidism.

Of particular note in this case were the values for normal and near normal serum alkaline phosphatase repeatedly determined by two independent laboratories during both the preoperative and postoperative states. Hyperparathyroidism with normal serum alkaline phosphatase has been noted in certain varieties of this disease. Thus, patients with little or no involvement of the skeleton have no derangement of alkaline phosphatase; furthermore, hyperparathyroid patients whose skeletal changes are those of osteoporosis rather than hyperparathyroidism may have a normal phosphatase level;[1] and, finally, hyperparathyroidism with multiple bone cysts but without generalized decalcification has been seen accompanied by normal phosphatase levels.[3]

Inasmuch as the exact mechanism for the production of an increased phosphatase level is not known, it is difficult to assign a correct explanation for the normal values observed in this case. However, a smooth postoperative course with freedom from tetany has been described before in cases of hyperparathyroidism with normal serum phosphatase[2] and the evidence here is further corroboration of that. Apparently, the surgeon need not be as fearful of acute tetany postoperatively if the preoperative values for serum alkaline phosphatase are normal.

The possibility arises that this patient was protected from postoperative tetany by her fetus. This does not seem likely since it has been shown that parathyroid extract does not pass through the placenta[11] and that parathyroidectomized pregnant rats are not protected from tetany by their fetuses.[8,12]

The renal complications of hyperparathyroidism are of two principal types: the formation of calculi and the deposition of peritubular calcium with calcium metastases in the kidney parenchyma.[13,14] This patient suffered from the latter type. This has been named nephrocalcinosis and, although such renal changes have been observed in certain types of pyelonephritis,[15] its usual cause is the prolonged hypercalcemia found in hyperparathyroidism.[16] The renal deposition of calcium, unlike the skeletal decalcification, is an irreversible process and removal of the parathyroid adenoma is not followed by removal of the calcium from the kidney tissues. Accordingly, although the condition of hyperparathyroidism may be treated successfully by surgery, the course of the patient may progress to eventual renal failure.[13] Although this particular patient did not show signs of renal failure, she was strongly advised against further pregnancies until her kidney function could be again evaluated.

It is interesting to speculate on the possible effect of pregnancy upon this patient's parathyroid adenoma. Inasmuch as it has been shown that the parathyroids enlarge in rats during pregnancy,[17] could it be possible that the tumor found here was activated, after four years of quiescence, at the time of pregnancy? If this assumption is made, it follows that the skeletal changes and renal calcification occurred after conception and during the six months before her operation. Such a rapid course would be unusual since the skeletal changes of hyperparathyroidism are generally considered to be a fairly late manifestation of the disease. Furthermore, this patient had consumed approximately a quart of milk daily during her life which would tend to delay even more the decalcification of her skeleton. In addition, even though microscopic nephrocalcinosis has been seen in acute, short-term, parathyroid poisoning, such interstitial calcification has not been demonstrable by x-ray;[18] the degree of renal calcification seen in this patient probably required a long-standing hypercalcemia. For these reasons we believe that her adenoma was active prior to her pregnancy and that only the occurrence of the osteoclastoma of her mandible lead to the diagnosis at this time.

In a case such as this, the principal concern of the physician should be with the mother, since the reports previously mentioned[5,6] indicate that the fetus survives the mother's metabolic disturbances with relatively little, if any, change from the normal.

SUMMARY

The case of a twenty-three year old pregnant woman suffering from hyperparathyroidism is presented. A large parathyroid adenoma was successfully removed during the fifth month of her pregnancy and she delivered, at term, a normal female child.

REFERENCES

1. Albright, F. Parathyroids—physiology and therapeutics. *J. A. M. A.*, 117: 527–533, 1941.
2. Keating, F. R. The diagnosis of primary hyperparathyroidism. *M. Clin. North America*, 29: 1019–1035, 1945.
3. Snapper, I. Medical Clinics on Bone Diseases. New York, 1943. Interscience Publishers, Inc.
4. Spingarn, C. L. and Geist, S. H. Hyperparathyroidism and pregnancy. *J. A. M. A.*, 113: 2387–2391, 1939.
5. Bevere, L. and Sorrentino, B. Contributio allo studio dell' osteite fibro-cistica generalizzata (m. di Engel-Recklinghausen). *Riforma med.*, 48: 313–318, 1932.
6. Fridericksen, C. Tetany in suckling, with latent osteitis fibrosa in mother. *Lancet*, 1: 85–86, 1939.
7. Bakwin, H. Tetany in newborn infants; relation to physiologic hypoparathyroidism. *J. Pediat.*, 14, 1–10, 1939.
8. Bodansky, M. and Duff, V. B. Regulation of level of calcium in serum during pregnancy. *J. A. M. A.*, 112: 223–229, 1939.
9. Shohl, A. T. Mineral Metabolism. New York, 1939. Reinhold Publishing Corp.
10. Albright, F. Hyperparathyroidism; its diagnosis and exclusion. *New England J. Med.*, 209: 476–480, 1933.
11. Hoskins, F. M. and Snyder, F. F. Calcium content of maternal and fetal blood serum following injection of parathyroid extract in utero. *Proc. Soc. Exper. Biol. & Med.*, 25: 264, 1928.
12. Kozelka, F. L., Hart, F. B. and Bohstedt, G. Growth, reproduction and lactation in absence of parathyroid glands. *J. Biol. Chem.*, 100: 715–729, 1933.

13. Albright, F., Baird, P. D., Cope, O. and Bloomberg, E. Studies on physiology of parathyroid glands; renal complications of hyperparathyroidism. *Am. J. M. Sc.*, 187, 49–65, 1934.
14. Anderson, W. A. D. Renal lesion in hyperparathyroidism. *Endocrinology*, 24: 372–378, 1939.
15. Albright, F., Dienes, L. and Sulkowitch, H. W. Pyelonephritis with nephrocalcinosis, caused by haemophilus influenzae and alleviated by sulfanilamide: report of 2 cases. *J. A. M. A.*, 110: 357–360, 1938.
16. Brindle, H. R. and Herrman, W. A. Diffuse calcific deposit outlining kidney lobules associated with parathyroid adenoma. *Am. J. Roentgenol.*, 41: 601–602, 1939.
17. Sinclair, J. G. Size of parathyroid glands of albino rats as affected by pregnancy and controlled diets. *Anat. Rec.*, 80: 479–496, 1941.
18. Hueper, W. Metastatic calcifications in organs of dog after injections of parathyroid extract. *Arch. Path. & Lab. Med.*, 3: 14–25, 1927.

Lupus of the larynx attacks most frequently the free margin of the epiglottis. Occasionally the entire epiglottis is destroyed without having caused pain or discomfort. This is not the case when destruction results from the ulceration and necrosis of active tuberculosis.

From "Tuberculosis of the Ear, Nose, and Throat" by Mervin C. Myerson (Charles C. Thomas).

INTRA-ABDOMINAL HEMORRHAGE DURING PREGNANCY

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THE loss of blood intra-abdominally during pregnancy is fortunately rare and Marchetti, Kuder and Kuder[1] report that even the commonest cause, ectopic pregnancy, occurs only once in every 293 pregnancies. Bleeding from uterine rupture, rupture of a vessel on a uterine fibromyoma, ovarian abnormalities, trauma, rupture of a varicose vein, genital and other malignancies during a pregnancy then become even less usual but nevertheless fully as dangerous to the pregnant woman.

The diagnosis of intra-abdominal hemorrhage during pregnancy presents many obstacles to the obstetrician. The bleeding is heralded by sudden abdominal pains followed by symptoms and signs of shock. There is little time for debate and speculation as the potential danger of severe sudden blood loss and resultant death make the diagnosis imperative and immediate treatment cardinal. Fatalities from ectopic pregnancy, for instance, are reported by Williams and Corbit[2] as responsible for one in every eighteen puerperal deaths in Philadelphia, one in every sixteenth death in New York City and one in every twelve deaths in Chicago.

In this report, we are concerned with rupture of a varicose vein during pregnancy as a cause for intra-abdominal hemorrhage. Harding and Concavan[3] reviewed the literature and found twelve such cases. Seven of the cases were discovered at autopsy and there were six survivors including their reported case. In their case they believed the rupture was due in part to sexual intercourse which occurred several hours before admission. All of those reported had as a symptom severe abdominal pain and signs of rapidly advancing shock. At operation the source of bleeding was usually difficult to locate and almost unrecognized in one incident. Treatment varied from classical cesarean section with ligation of the bleeding vessel, section hysterectomy, to simple ligation. The following is a case report of one of these unusual problems:

CASE REPORT

Mrs. H. C., a thirty-one year old para 1-0-1, had her last menstrual period July 20, 1945, followed by slight nausea. Her only other pregnancy resulted in a full term normal delivery five years previously. With her first office visit November 20, 1945, the uterus measured 16.5 cm. above the symphysis pubis with the fetus in L. O. A. position; the fetal heart rate was 160 in the left lower quadrant. Her blood pressure was 110/80, urinalysis negative and hemoglobin 85 per cent. She had had an appendectomy performed three years previously and had only one small varicose vein in the right leg.

On December 10, 1945, after a morning of Christmas shopping, she returned home and rather suddenly felt cold, weak and faint. This was followed by dizziness and severe cramps in the lower abdomen and lower mid-back. She was rushed to the hospital by ambulance in a semi-comatose condition and was first seen thirty minutes after her complaints. She had had sexual intercourse four days before her illness.

On admission she complained severely of lower abdominal cramps and was in shock. Examination showed a well developed and well nourished woman who was dyspneic, cyanotic and in acute distress. Blood pressure readings were inaccurate but were approximately 60/38 and the radial pulse was not palpable. Dr. Floyd Burg, medical consultant, declared the heart and chest free of organic lesions. On abdominal examination the uterine fundus could be felt about 20 cm. above the symphysis and there was generalized severe abdominal and flank tenderness. Pelvic and rectal examinations revealed no masses or localized areas of

tenderness. The diagnosis was five months' pregnancy and acute intra-abdominal hemorrhage—cause unknown.

She was immediately given 2 units of plasma (250 cc. each) while she was prepared for surgery. Two 500 cc. transfusions of whole blood were given before and two 500 cc. transfusions of whole blood were given during surgery. The anesthesia included low concentration of cyclopropane and 3 cc. curare. Through a lower left midline incision large fresh clots and free blood were found generally throughout the abdomen and all of the peritoneal surfaces were pale and yellow. There was a five months' intra-uterine pregnancy. A bleeder was found at the base of the posterior right broad ligament which was an irregular longitudinal break in a varicose vein measuring about 4 mm. in transverse diameter. The back bleeding from this rent rapidly filled the cul-de-sac. The total measured volume of blood removed manually and by aspiration was 2,200 cc. not including that on sponges, packs and that left in the abdomen. The fragmented vein was clamped and sutured with No. 1 chromic figure-of-eight suture and bleeding was controlled. Rapid closure was done with No. 0 chromic continuous on the peritoneum and No. 1 chromic continuous on fascia and fine dermal to the skin. She remained in shock throughout the operation despite blood, coramine and ephedrine sulfate.

On her return to bed, the blood pressure gradually rose from 85/0 to 100/50 and her general condition became better. The day following her operation she spontaneously passed a premature non-viable fetus and placenta without difficulty. She remained febrile for three days after the operation and the remainder of her eleven days in the hospital were uneventful. The wound healed *per primum*. She received her fifth transfusion on the second postoperative day. Her essential laboratory work was within usual limits except for evidences of secondary anemia.

Five postoperative examinations between January 3, 1946, and March 5, 1946, revealed a well healed and well supported abdominal wound. The uterus was situated in the anterior position and no unusual masses could be found. Her hemoglobin with her last visit was 14.5 Gm. (100 per cent).

In the matter of surgical management of this type of hemorrhage from a varicose vein, I favor simple ligation of the bleeding vessel. Perhaps the best argument for this simple ligation is that this procedure is the easiest and quickest possible solution for these shocked women. Emptying of the uterus or a hysterectomy surely adds more shock to an already grave situation by prolonging the anesthesia time and generally increasing the operative burden to the patient. The postoperative vaginal delivery of a premature infant in this report cause no complications but I am quite certain that a section at the surgery table would have jeopardized the patient unreasonably. Further, by simple ligation it might be possible to allow pregnancy to progress to an age when a viable birth would be possible.

The second most important factor in the management of these intra-abdominal hemorrhages in the pregnant is the prompt and complete replacement of the blood loss by blood transfusions. Ideally, the cross matchings should be proper and the blood should be RH negative. In dire emergency, however, blood plasma and group O blood without crossmatching can be used if the risks of the latter are accepted.

SUMMARY

An unusual case of spontaneous rupture of a varicose vein during pregnancy is noted along with previously reported cases and the treatments.

REFERENCES

1. Marchetti, A. A., Kuder, K. and Kuder, A. *Am. J. Obst. & Gynec.*, 52: 544–555, 1946.
2. Williams, P. F. and Corbit, J. D. Analysis of 101 fatalities from ectopic pregnancy. *Am. J. Obst. & Gynec.*, 48: 841, 1944.
3. Harding, K. M. D. and Concannon, A. B. An unusual case of intraperitoneal bleeding from a ruptured uterine vein during pregnancy. *J. Obst. & Gynaec. Brit. Emp.*, 50: 208–211, 1943.

PLACENTA ACCRETA

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TRUE placenta accreta is so rarely encountered that its existence is not recognized until some serious obstetrical accident occurs leading to castastrophy. For this reason we believe that the following case merits reporting in the present day literature.

CASE REPORT

M. M., a colored female aged twenty-nine and para III, was admitted to the service of Dr. I. R. Hansen with the history of having a premature seven months' delivery at home twenty-four hours previously; she had been delivered by a midwife. The child survived only three hours. The midwife had been unable to express the placenta and, after consultation with Dr. Robert Johnson of the Worcester County Health Department, she was sent to the Peninsula General Hospital on January 21, 1946. No vaginal bleeding had occurred since delivery.

The patient's previous history was that of two past pregnancies. The first was complicated by a placenta praevia and the second by a retained placenta for which manual removal was necessary at another hospital. This occurred in 1942. The course of the present pregnancy had been uneventful except for early labor. Blood Wassermann reaction was repeatedly negative.

One hour after admission, the patient was anesthetized with cyclopropane and oxygen and an attempt made to express the placenta by Crede's method. This failed to dislodge the placenta and caused no vaginal bleeding. Sulfadiazine was administered with pitocin and an ampule of syntropan, none of which produced any result. Conservative treatment was continued for another forty-eight hours, the true condition still unrecognized.

At the end of this period, a dilatation and curettage was attempted by one of us (R. L. R.) under sterile technic and intravenous pentothal sodium anesthesia. The operation report was as follows:

"Routine preparation. The anterior lip of cervix is grasped with tenaculum and drawn down. The cervix is gently dilated, there is a slight cervical tear from the delivery. The large placental forceps is introduced and the placenta which is located in the anterior fundus is grasped. It is impossible to pull it free. It comes free only in small necrotic pieces which are not otherwise abnormal. Attempted currettage is also impossible as the curette will not take off the tissue from the fundus although the rest of the uterus seems normal. A pack was introduced into the uterus and one in the vagina." Some free bleeding occurred at the end of this procedure and the packs were therefore employed.

The senior authors were now consulted and the true diagnosis made. The patient had a violent temperature elevation after the above procedure, the mouth temperature rising to 104°F. This subsided to normal and twenty-four hours later the packs were removed and a supravaginal hysterectomy was performed by one of us (L. A. R.). This operation was attended with considerable hemorrhage necessitating two blood transfusions and blood plasma. Four Gm. of sulfanilamide crystals were placed in the lower pelvis. Two Mikulicz's drains were placed in Douglas' cul-de-sac and the abdominal wound closed in layers using buried, stainless steel wire in the fascia.

The postoperative course was uneventful. Penicillin and sulfadiazine were administered prophylactically but the patient had no elevation of temperature, pulse and respiration and was discharged on the twelfth postoperative day with the wound healing well.

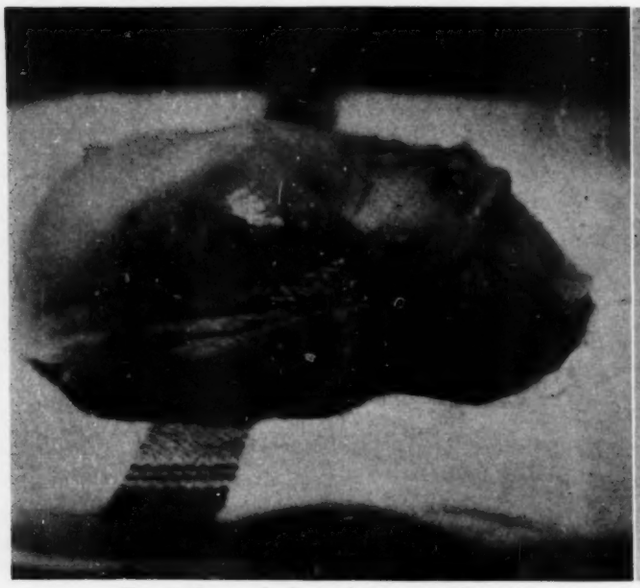

FIG. 1. Lateral view of gross specimen.

FIG. 2. Anterior view of gross specimen.

The pathologic specimen showed a whole placenta densely adherent to the anterior wall of the uterus. The lowermost part showed some necrosis and blood clot from the trauma of the previous day. The remainder of the placenta showed no necrosis and could not be separated. (Figs. 1 and 2.)

The microscopic sections (Figs. 3 to 8) are extremely interesting. The examination and report were made by Dr. Howard Maldies, of Baltimore, and photomicrographs illustrate this report as follows: (1) Sections through the decidua vera show no definite scarring; however, necrotic changes are present; (2) Other blocks show acute inflammatory changes between the villi as well as an acute metritis; (3) Section of the elevated, whitish, soft area in the lower portion of the cavity, which look like a possible fibromyoma, shows placental tissue; (4) Other blocks show nothing remarkable.

FIG. 3. Microphotograph; hematoxylin and eosin stain; × 63.

The villi are embedded in the muscle (hematoxylin and eosin stain). They are distorted and small, being replaced by fibromyomatous tissue. Hyaline changes are evident. In the upper region, the villi are clear and well defined.

Van Gieson's stain brings out the connective tissue and the hyaline changes. The intervillous spaces contain blood and a variety of white cells. The stain clearly depicts the excess amount of collagen fibers and also the hyaline changes. This is not shown in the photomicrographs.

Placenta accreta is defined as a pathologic adherence to and/or invasion of the uterine wall by the placenta with absence of the spongiosum layer of the decidua basalis either partially or completely. Three types are recognized in the literature: (1) Placenta accreta in which the placenta is only pathologically adherent; (2) placenta increta in which there is penetration of the uterine wall and (3) placenta

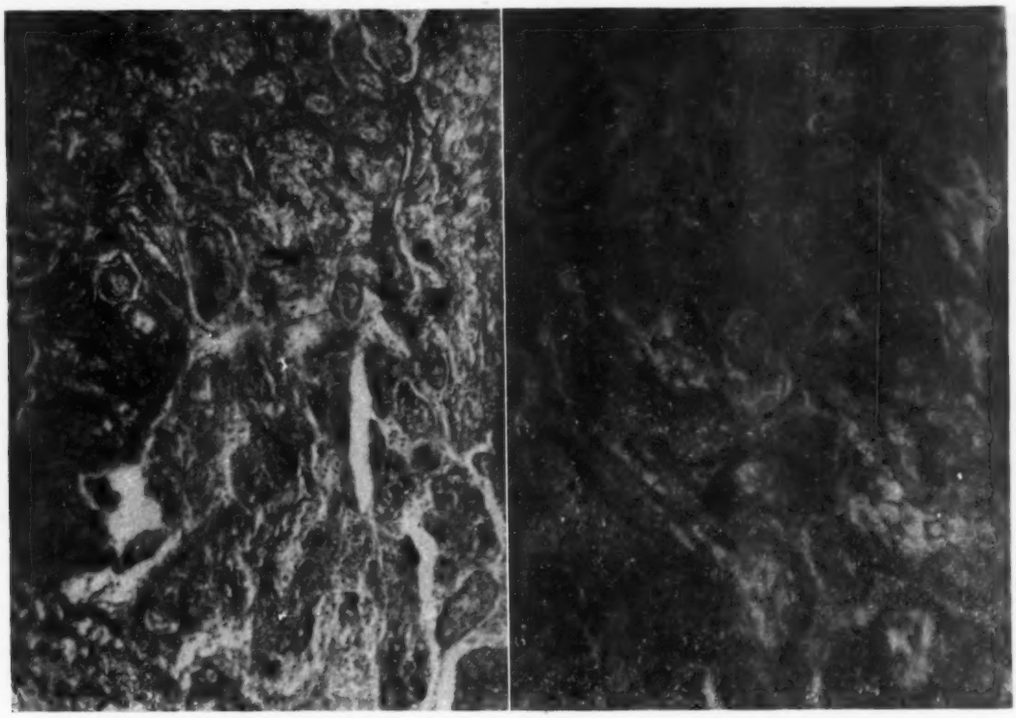

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Fig. 4. Microphotograph; Van Gieson's stain; × 100.
Fig. 5. Microphotograph; Van Gieson's stain; × 210.

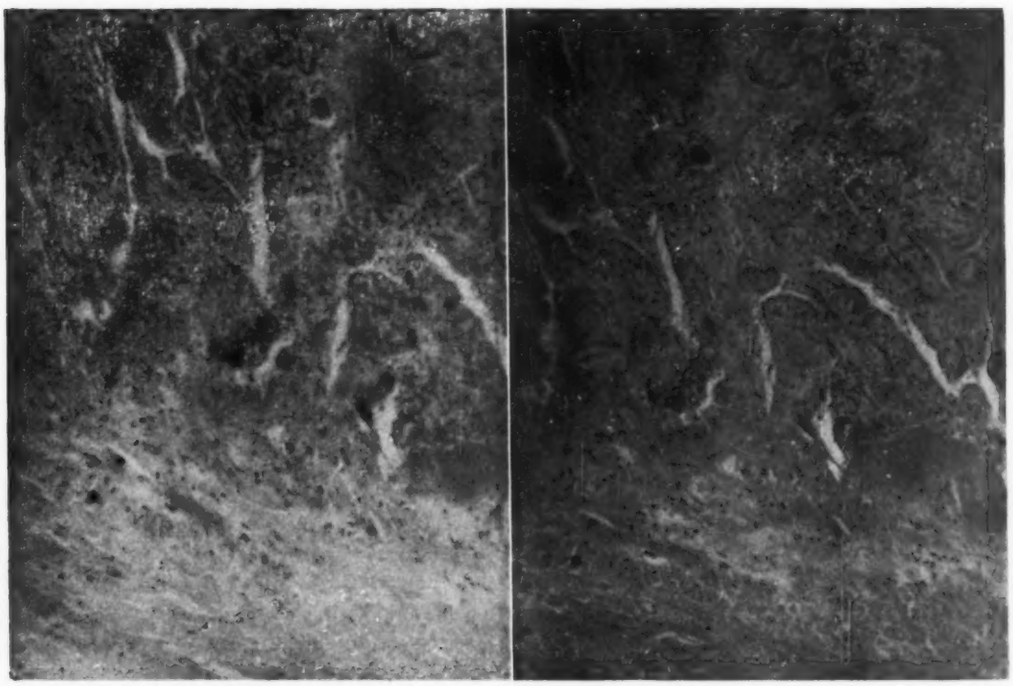

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Fig. 6. Microphotograph; hematoxylin and eosin stain; × 100.
Fig. 7. Microphotograph; hematoxylin and eosin stain; × 100.

FIG. 8. Microphotograph; hematoxylin and eosin stain; × 210.

percreta in which the uterine wall is invaded to the serosal layer and may actually rupture the uterus. Thus, our case falls into class two or placenta increta.

Incidence. Kaltreider, of the University of Maryland, has ably summarized the literature in a recent case report (1945). Incidence of placenta accreta varies according to various authors from 1:1956 to as high as 1:40,000 deliveries. This depends on the strictness with which the term is applied. Many an adherent placenta has been called placenta accreta in past literature but the true picture must occur with greatest rarity. According to Kaltreider, 159 cases appeared in the literature at the time of his publication but he was of the opinion that more had probably been published in inaccessible literature.

Etiology. Many theories exist as to the cause of this interesting condition. Some previous trauma to the endometrium seems to be present in all cases. Thus, fibroid tumors, previous dilatation and curettage, endometritis, manual removal of the placenta, previous post partum sepsis, previous cesarean section are all thought to be etiologic factors. Tiemayer suggested a hormonal theory, chiefly a defect in the corpus luteum. He and King both suggest that improper therapy with endocrines may be a factor.

In our case, manual removal of a placenta had preceded this pregnancy; there had been no hormonal therapy of any kind. Placenta praevia was another complication in our case existing in the patient's first pregnancy.

Symptomatology. The symptoms of complete placenta accreta are silent. There is no bleeding, shock or other systemic symptoms. Therefore, an adherent placenta without vaginal bleeding should always arouse suspicions that this condition exists. The partial placenta accreta, however, shows severe symptoms and hemorrhage may be profuse or moderate. The placenta does not move into the vagina and the patient develops more and more signs of shock due to blood loss which demand immediate treatment by blood replacement.

Treatment. In our case, because of instrumentation and succeeding hemorrhage, hysterectomy was carried out with good success. In the previously reported cases, 84 per cent of those with hysterectomy survived but these statistics include cases of ruptured uterus as well as those with instrumental attempts in an era before penicillin. Only 27 per cent of those subjected to manual removal only survived so that this procedure obviously carries the highest mortality. A newer, conservative method has recently been employed by several authors similar to the new method of dealing with the placenta in abdominal pregnancy. In the latter, the cord is tied and the placenta left *in situ* undisturbed to be absorbed later. In the case of the placenta accreta totales, the uterus is packed for twenty-four hours then nothing further is done. The placenta is eventually absorbed or sloughed off as the stimuli from the corpus lutea disappear. Schumann, in Philadelphia, successfully used this method in four cases, Potter in one, Futh in one and Anderson in one; all reported recovery although a stormy convalescence was noted

in each case. In Schumann's series, two cases had normal pregnancies following the procedure. Although penicillin and sulfa drugs have greatly reduced the dangers of infections, still the sections of our case show many areas of acute metritis and many contamination organisms resistent to chemotherapy may, on occasion, invade the sloughing, necrotic placenta. In our opinion, this method should therefore be one of choice only when the desire for succeeding pregnancies is great and the symptoms of infection and potential infection are low.

In partial placenta accreta, or a total accreta case in which trauma has produced bleeding, the conservative method can no longer be a matter of choice. The bleeding is usually very active, so much so that packing will not control it and immediate hysterectomy with supportative and blood replacement therapy is the only method of treatment. Here again prompt recognition of the condition and prompt institution of remedial methods are life-saving and hesitation or indecision invite rapid disaster.

SUMMARY AND CONCLUSIONS

A case of placenta increta is herein reported with a review of the literature. Treatment is discussed with the possibility of conservative measures in total accreta cases as used by Schumann and others. Recommendation is made to reserve this type of treatment for uninfected, total cases without bleeding. In cases with hemorrhage, either due to incomplete placenta accreta or to instrumentation, attention is called to the immediate need for surgical and blood replacement therapy.

REFERENCES

1. Anderson, H. E. *Am. J. Obst. & Gynec.*, 42: 545, 1941.
2. Beck, Alfrede C. *Am. J. Surg.*, 35: 430, 1937.
3. Cunningham, John F. *J. Obst. & Gynaec. Brit. Emp.*, 49: 149, 1942.
4. Davidson, N. R. *Am. J. Obst. & Gynec.*, 46: 732, 1943.
5. Davis, Carl Henry. Gynecology and Obstetrics. Hagerstown, Md., 1943. W. F. Prior Co., Inc.
6. Feuling, J. C. *Minnesota Med.*, 22: 615, 1939.
7. Futh, H. *Zentralbl. f. Gynäk.*, 63: 2174, 1939.
8. Guiroy, A. J. and Collilas, D. *Soc. de obst. y ginec. de Buenos Aires*, 10: 451, 1931.
9. Hudgins, A. P. *West Virginia M. J.*, 33: 504, 1937.
10. Kaltreider, D. Frank. *Bull. School Med. Univ. Maryland*, 30: 1–10, 1945.
11. King, Arthur G. *Obio State M. J.*, 34: 652, 1934.
12. Neumann, H. O. *Ztscbr. f. Geburtsb. u. Gynäk.*, 108: 25, 1934.
13. Romaniello, G. *Clin. ostet.*, 39: 230, 1936.
14. Schockaert, R. *Bruxelles M.*, 16: 200, 1935.
15. Simoes, F. *Lisboa méd.*, 10: 414, 1933.
16. Trelles Montes, N. *Vida nueva*, 34: 147, 1934.

PRIMARY OVARIAN PREGNANCY OF FOUR MONTHS

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PRIMARY ovarian pregnancy is so rare that in reviewing English and American Literature there are ninety cases reported which are well substantiated. The purpose of presenting this paper is to add this unusual primary ovarian pregnancy of approximately four months' gestation for statistical studies. In recent years, obstetricians, gynecologists and surgeons have taken pains to report these unusual pregnancies so that today the literature is slowly becoming enriched with the knowledge of these abnormal conditions.

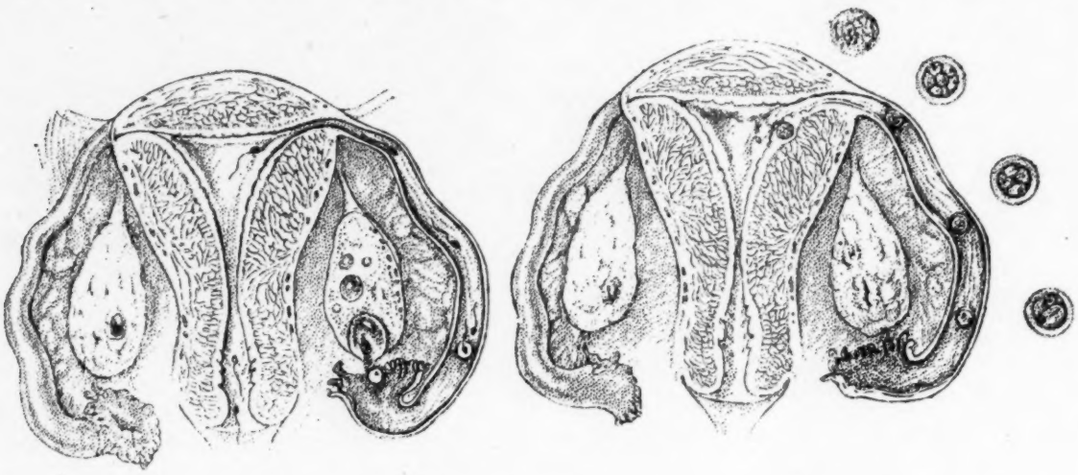

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FIG. 1. Ovulation and fertilization. (Taken from a pamphlet describing the various phases of conception and nidation—author unknown.)
FIG. 2. Migration of a fertilized ovum and nidation. (Taken from the same pamphlet as Figure 1.)

Conception in the obstetrical sense means the union of the male and female elements of procreation. It has variously been termed fecundation, impregnation and fertilization.

How does the ovum reach the tube from the ovary? The ovary lies in a little depression the fossa ovarica, and is covered in part by the mesentery of the tube whose fimbriae are in close proximity. The ampulla of the tube opens outward in numerous projections—the fimbriae, the prolongations of the longitudinal foldings of the tube. These are covered with ciliated epithelium. The waving of the cilia moves toward the uterus. An efficient aspiratory current is produced in the peritoneal fluid in the neighborhood of the end of the tube.

Experimentally in rabbits, Lode saw tiny particles placed in the neighborhood of the tube which were gradually taken in by the fimbriated end. They appeared finally in the vagina. The ovum is caught in this current and led to the tube.

Motile sperm has been found in the vagina as long as thirty-seven hours after coitus and twelve hours in the cervix. In 20 per cent of the cases studied, motile sperms were found in the cervix more than three days after sexual intercourse; thus the sperm can fertilize the ovum even three days after coitus. The sperm reaches the ovum in the tube by means of its own locomotive power. They sometimes overcome obstacles as occur in impregna-

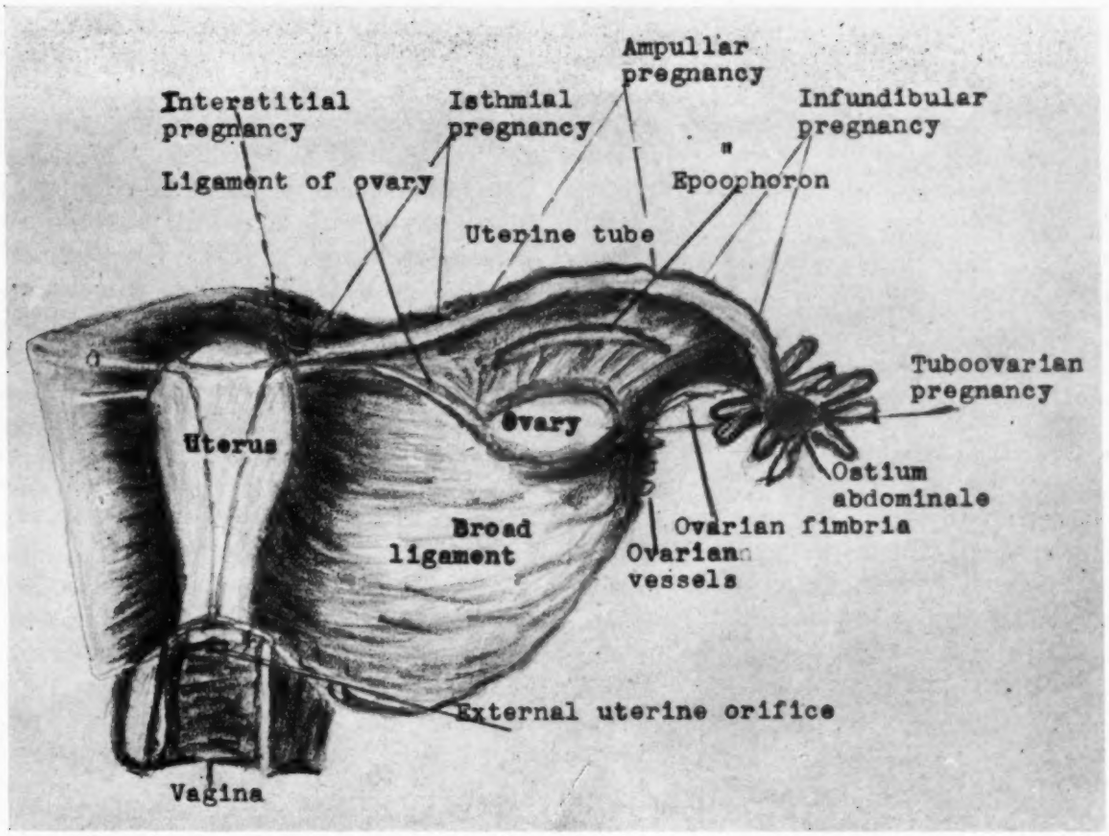

FIG. 3. Posterior view of uterus and right broad ligament. The broad ligament has been spread out and the ovary drawn downward. (From Gray's anatomy.) Pregnancies as described by Crossen and Crossen in "Diseases of Women" are indicated in print.

tion when the semen is deposited on the vulva, as in case of rape and unruptured hymen.

Ectopic gestation or extrauterine pregnancy is the nidation and development of the fertilized ovum in any location outside the uterine cavity.

ANATOMICOPHYSIOLOGIC CONSIDERATIONS

The uterine tube, tuba uterina, Fallopian tube or oviduct are synonyms. The uterine tube consists of three coats: serous, muscular and mucous. Each tube is about 10 cm. long and consists of three portions; (1) the isthmus or medial constricted third, (2) the ampulla or intermediate dilated portion which covers over the ovary and (3) the infundibulum with its abdominal ostium, surrounded by fimbriae, is attached to the ovary. The uterine opening is minute and only admits a fine bristle probe; the abdominal opening is somewhat larger. The internal or mucous coat is continuous with the mucous lining of the uterus and, at the abdominal ostium of the tube, with the peritoneum. It is thrown into longitudinal folds which in the ampulla are much more extensive than in the isthmus.

This form of epithelium is also on the inner surface of the fimbriae, while on the outer surface of these processes the epithelium gradually merges into the mesothelium of the peritoneum. The highly specialized function of the columnar ciliated epithelium of the tube is such that while it permits the secretion of the glands to trickle out of the fimbriated end into the peritoneal cavity, the ovum is gathered by the fimbriae, is brought to the ostium and the cilia propel it toward the cavity of the uterus. The various stages of the process of the fertilized ovum has been studied on mammals. We have no direct knowledge re-

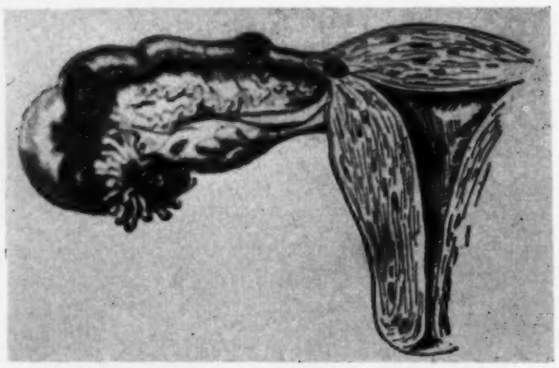

FIG. 4. Extra-uterine pregnancy, as described in Dorland's Medical Dictionary.

garding the fertilization of the human ovum.

It is generally admitted that fertilization takes place in the ampullary part of the uterine tube and the cilia propel it toward the cavity of the uterus assisted by the peristaltic wave of the tube, a journey probably occupying three days. It is stated that unless the egg is fertilized within six hours after ovulation, it becomes impotent or incapable of being fertilized.

TYPES

Extrauterine pregnancies are classified as (1) tubal, (2) ovarian and (3) wandering or abdominal pregnancies. Tubal pregnancy is designated according to location: (1) cornual or interstitial, (2) isthmian, (3) ampullar, (4) infundibular and (5) tubo-varian pregnancy; "ampullar" (in the outer dilated part of the tube); "isthmial" pregnancy (in the narrow part of the tube near the uterus, and "interstitial" pregnancy (in the interstitial part of the tube). This last type of "extrauterine" pregnancy is within the uterine wall but not in the uterine cavity, unless it breaks into the cavity during the development.

If the pregnancy is found in the peritoneal cavity without any apparent connection with the tubes, uterus or ovary, it is called a wandering or abdominal pregnancy. Such a pregnant mass (fetus and surrounding membranes) may be attached to and receive blood supply from various structures. Tuholske reported a case in which the placenta was attached to the liver. There is considerable controversy as to the etiology of abdominal pregnancy and the actual occurrence of primary implantation of the fertilized ovum outside the genital tract. Some believe that "abdominal" implantation is always a "transplant" from an ovarian or tubal position of primary implantation, so that "abdominal pregnancy" can be described as a gestation which is not predominantly intratubal in anatomic position when found. "Primary abdominal pregnancy" can be described as any abdominal pregnancy in which evidences of origin from a primary intrauterine or intratubal position are absent, and wherever the ovary is not definitely involved in the placental site.

Ovarian pregnancy occurs when the ovum is found developing in the ovary. It is the rarest type of extrauterine pregnancies. In this type, cases have been reported in all phases of development, from the earliest stages to that of a mature fetus lodged in the ovary. The literature is incomplete and slightly confusing. However, during the past decade a great deal of interest has been accumulating on the subject so that with succesive reports, the true incident will be found. Young and Hawk reported cases of ovarian pregnancies with the incident of 0.7 per cent of all uterine pregnancies in their series of 148 cases. Spiegelberg postulates four requirements for the diagnosis of a true primary ovarian pregnancy: (1) The tube on the affected side must be intact. (2) The fetal sac must occupy the position of the ovary. (3) It must be connected with the uterus by the utero-ovarian ligament. (4) Definite ovarian tissue must be found in the sac wall. Jordan et al. have presented the most complete histologic description of this type of case. They mention the histologic development of such an entity and differentiate between primary and secondary ovarian pregnancy. They speak of intrafollicular and extrafollicular or superficial ovarian pregnancy types.

ETIOLOGY

Some observers have found that ectopic gestation occurs in 1:1000. Schuman com-

puted the incident 1:300. More recent observers reduced it to 1:200. It is more predominant with the white race but that of course is due to the difference in size of the population. A normal condition of the oviduct is of primary importance. Abnormality of the tube may interrupt the onward progress of the ovum. *Salpingitis* (gonorrhea) may lead to destruction of the cilia and cause sacculations of the tube itself. The action of the cilia is important to propel the ovum toward the uterine cavity. The peristaltic wave is of secondary importance and not sufficient to carry the ovum along. Inflammation in and around the tube may cause a narrowing of the lumen or the peritubal adhesions caused by the inflammation may lead to a constriction of the tube. The ovum may drop into one of the sacculations or kinks caused by the inflammation; it may be caught there and be unable to make any further progress.

Ectopic gestation occurs more frequently in cities, predominantly after the thirtieth year of life; it occurs usually after a period of long sterility especially in women who have had pelvic disease. Among other causes can be enumerated infantile tubes with imperfect development of the cilia, excessive long tubes causing many convolutions, spasm of the muscular coat or undeveloped muscular coat, abnormal corpus luteum, endometriosis of the tube and ovary and increased invasiveness of the trophoblasts covering the ovum, thus favoring an immediate nidation and puerperal infection.

Explanations have been offered as to why the fertilized ovum does not lodge in the tubes normally. First, the trophoblast is not developed until the fertilized ovum reaches the uterine cavity; secondly, the tubal mucosa is not designed for implantation. Novak believes that the retardation of the progress of the ovum gives time for the development of the trophoblast while the fertilized ovum is still in the tube. *A primary* or true ovarian pregnancy is one in which the ovum remains in the follicle, is fertilized there, develops a sac from the contiguous ovarian tissue and continues its growth in the follicle. *Secondary* ovarian pregnancy is one in which the ovum is fertilized in tissues, tubal or uterine, outside of the ovary, develops its sac from this extra-ovarian tissue and, after developing its sac, becomes detached from its original soil and secondarily attaches itself to the ovary.

The possible mechanism of primary or true ovarian pregnancy is still a matter of speculation: (1) Perioophoritis may cause the ovum to be incarcerated in the follicle, may become impregnated there and grow; (2) a rupture of a centrally placed follicle into a previously vacated surface follicle; (3) retention of Müllerian tissue in the ovary and (4) endometriosis.

To whatever theory we ultimately subscribe we must accept the existence of two constant factors operating in its etiology: (1) that the ovum remains imprisoned within the cavity of the ruptured follicle and (2) that the sperm cell finds its way to this particular ovum.

Most of these ovarian pregnancies terminate by ovarian abortion in the first trimester and are found at laparotomy. They rarely reach full term and are unsuspected by the patient and attendant until labor has supervened which is usually followed by death of the fetus after a period of unproductive labor. Cases have been reported which have gone to full term and a living child has been recovered through a laparotomy.

CASE REPORT

M. G., a colored female, para 3, twenty-nine years old, married, very obese, (250 pounds), was admitted to the Morrisania City Hospital from the out-patient department on April 25, 1945, with the presumptive diagnosis of fibroma of the uterus. For three weeks prior to her admission her chief complaint was of lower abdominal pains, pains in the lower part of her back and slight fever. The range of rectal temperature being from 98°C. to slightly above 100°F. For a week prior to her admission she had considerable whitish vaginal discharge but

FIG. 5. The pregnancy mass when it was intact.

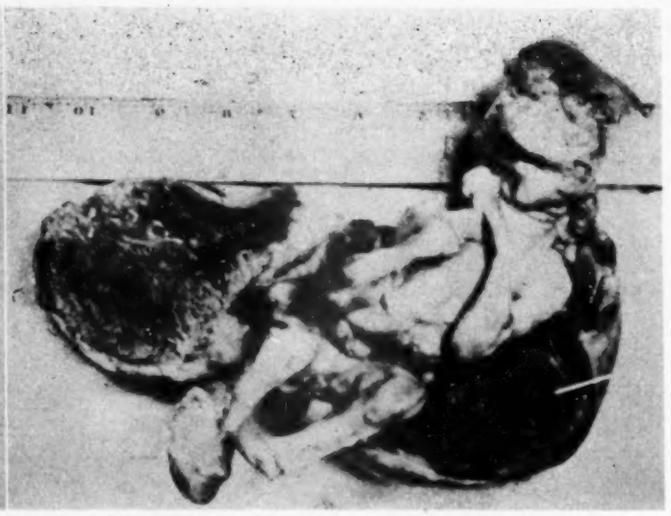

FIG. 6. Illustration of the fetus when the mass was opened.

no bleeding. There was no history of dysuria nor of a previous operation except for an abscess on the left leg which was incised and healed up very rapidly. She had had no serious illness and her family history was essentially negative. The last menstrual period took place on April 11, 1945.

Physical examination revealed a markedly obese, colored female, not acutely ill. Blood pressure was 162/68; pupils reacted to light and accommodation; breasts were negative for masses. Axillae showed no palpable glands present. The nipples, heart and lungs were normal. The abdomen was very obese. On examination a large globular, smooth, firm mass about the size of a small football could be felt from the symphysis pubes to the left costal border. The mass did not seem to be fixed. It was freely moveable and could easily be pushed to the right of the umbilicus without eliciting either pain or tenderness. Pelvic examination revealed considerable white discharge present. The cervix was normal. The mass felt in the abdomen seemed to have some relation to the uterus. There was considerable tenderness in the left adnexa.

A scar was visible over the left middle third of the tibia. No edema of the ankles was present. She stated that about seven years ago she was treated for women's trouble. Several surgeons examined the patient and made the diagnosis of left ovarian cyst or a large tubo-varian abscess with adherent omentum and gut or a pedunculated fibroma. The Kahn test was 1+.

The Wassermann reaction was negative. The examination of the discharge taken from the cervix, urethra and vagina was found to be negative for Neisserian organism. The Aschheim-Zondek test was not done. Three weeks after admission to the hospital (May 17, 1945) the patient was operated upon.

A midline incision was made below the umbilicus, the fascia was incised and the muscle was pulled laterally. When the peritoneum was opened, a large mass, oval in shape and the size of a small football, was found in the abdomen. The mass appeared to be pedunculated and situated well above the brim of the pelvis. A loop of ilium was bound to it, denoting that at some time there must have been an inflammatory process around it. This was more noticeable on the right side of the mass. The left side was bound to parietal peritoneum. The mass was gently peeled by blunt dissection from all adherent structures. A pedicle (which seemed to be the utero-ovarian ligament) was clamped, cut and ligated with No. 2 chromic suture. All bleeding was checked; one penrose drain was introduced into the left pelvic cavity. The left tube was found to be normal. There was no evidence of the left ovary. Closure was completed in layers.

The patient had an uneventful recovery and after eleven days left the hospital cured. In a recent check-up on April 1, 1946, one year later, the patient had no complaints and was doing well.

The pathologic report was as follows: Gross: The mass was about the size of a large grape-

fruit; cut open it contained a fetus partially necrotic and misshapen; the placenta was attached to the wall which was thick, firm and hemorrhagic. Microscopic: Sections through the wall showed almost complete infarction. There were a few cellular elements which were inflammatory and in the necrotic zones; the villi and decidual cells could be distinguished. No ovarian tissue was found.

Diagnosis: Intra-abdominal pregnancy; the origin could not be determined.

CONCLUSION

From the above mentioned facts one is led to believe that we are dealing with a case of ovarian pregnancy. It is hard to expect all the postulates offered by Spiegelberg, especially when we are dealing with such a large mass; because when the ovary is involved, unless one is dealing with a painstaking pathologist who will make a thorough search of the mass to locate the presence of ovarian tissue, the ovarian tissue may be so displaced and so remotely located that it is well nigh impossible to find it.

We have here 3 of the postulates: (1) the presence of an intact left tube, (2) the absence of the left ovary and (3) the mass seemed to be connected to the uterus through the ovarian uterine ligament.

By deduction we must conclude that in the presence of these findings we are dealing with a case of primary ovarian pregnancy. This patient, despite the fact that she was pregnant, menstruated regularly without any interruption and without symptoms. Had the abdomen been x-rayed, the fetal parts would have been seen for the fetus is radiopaque after three months.

REFERENCES

Bodenheimer, J. M. Abdominal pregnancy. *New Orleans M. & S. J.*, 92: 454–456, 1940.

Brown, J. H. Abdominal pregnancy: report of 2 cases. *Northwest Med.*, 40: 414–416, 1941.

Corbet, R. M. A case of abdominal pregnancy at term. *Irish J. M. Sc.*, pp. 176–177, April, 1938.

Cornell, E. L. and Lash, A. F. Report of ten cases of abdominal pregnancy. *Illinois M. J.*, 65: 462, 1934.

Courtiss, M. *Am. J. Obst. & Gynec.*, 44: 128–133, 1942.

Crecca, William D. and Cacciarelli, Robert A. Full-term abdominal pregnancy with recovery of both mother and baby. *Am. J. Obst. & Gynec.*, 36: 312–313, 1938.

Dibbins, Samuel A. Abdominal pregnancy; case report. *Am. J. Surg.*, 63: 402–404, 1944.

Eisaman, J. R. and Ziegler, C. E. Abdominal pregnancy; report of a case with full term living infant and recovery of the mother. *J. A. M. A.*, 104: 2175–2176, 1935.

Falk, Henry C. and Rosenbloom, Monroe A. Extrauterine pregnancy; an analysis of 313 cases from the Harlem Hosp. *Surg., Gynec. & Obst.*, 62: 228–235, 1936.

Fitzgerald, James E. and Brewer, John I. Extrauterine pregnancy. *Am. J. Obst. & Gynec.*, 30: 264–269, 1935.

Friedman, S. Louis. Abdominal pregnancy; diagnosis confirmed by hysterography. *Am. J. Obst. & Gynec.*, 33: 683–686, 1937.

Gaines, C. D., Collins, and Brown, H. Abdominal pregnancy: report of 2 cases. *South M. J.*, 31: 1278–1280, 1938.

Gardner, Archibald R. and Middlebrook, Gardner. Abdominal pregnancy, survey of the literature and report of an unusual case. *Am. J. Surg.*, 66: 161–167, 1944.

Greenhill, J. P. Hysterography as an aid in the diagnosis of abdominal pregnancy; report of case. *J. A. M. A.*, 106: 606–608, 1936.

Hamblen, Robert N. Abdominal pregnancy at term. *West. J. Surg.*, 48: 310–312, 1940.

Jones, Walter C., Jr. and Bowlen, L. W. Abdominal pregnancy. Case report. *Bull. Jackson Mem. Hosp.*, 3: 13–16, 1941.

Jordan et al. *Surg., Gynec. & Obst.*, 54: 485, 1932.

Lucas, C. F. Abdominal pregnancy; delivery of a living 8 months baby. *Brit. M. J.*, p. 722, June, 1942.

Lull, Clifford B. Abdominal pregnancy. *Am. J. Obst. & Gynec.*, 40: 194–202, 1940.

Mason, L. W. Advanced abdominal pregnancy; with special reference to the management of the placenta, with a report of 3 cases and review of the literature. *Am. J. Obst. & Gynec.*, 39: 756–762, 1940.

MacGregor, Arthur S. Abdominal pregnancy near term. Operation and hormonal studies of the blood and urine with the placenta left in situ. *Am. J. Obst. & Gynec.*, 34: 1030–1032, 1937.

Mann, B. et al. *Am. J. Obst. & Gynec.*, 41: 322, 1941.

Mendenhall, A. M. Diagnosis of advanced abdominal pregnancy. *Am. J. Surg.*, 18: 270–271, 1932.

Mundell, J. J. Full term abdominal pregnancy; report of a case. *M. Ann. Dist. Columbia*, 2: 86–90, 1933.

Nicodemus, R. E. and Carrigg, L. G. Abdominal pregnancy requiring secondary removal of the placenta. *Am. J. Obst. & Gynec.*, 39: 153–154, 1940.

Phaneuf, Louis E. and MacMahon, H. Edward. Abdominal pregnancy, fifth month. *Am. J. Surg.*, 63: 107–117, 1944.

Randall, L. W. and Wellbroch, W. L. A. *Proc. Staff Meet., Mayo Clin.*, vol. 9, p. 134.

Strumpf, I. J. *Am. J. Obst. & Gynec.*, 45: 353, 1943.

Young, M. A. and Hawk, G. M. *Amer. J. Obst. & Gynec.*, 26: 97, 1933.

OVARIAN PREGNANCY

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THE incidence of ovarian pregnancy is still low enough to warrant reporting individual cases.

Russell and Black, in 1940, found only fifty-two cases including the one they reported which answered the four criteria formulated by Spiegelberg. Stamm, in June, 1946, states that there are eighty-five proven cases reported and adds one of his own. Eckerson found one ovarian pregnancy in the 339 cases of ectopic pregnancy occurring at St. Lukes Hospital, New York, in a forty-year period, an incidence of 0.2 per cent. Young and Hawk report one case in a series of 148 cases of ectopic pregnancies over a period of sixteen years, an incidence of 0.7 per cent. Mann, Meranzet and Leff reported the only case seen at the Mount Sinai Hospital of Philadelphia over a period of twenty-five years.

Spiegelberg, in 1878, outlined the following criteria for true ovarian pregnancy: (1) The tube must be normal and intact and have no organic connection with the gestation sac; (2) the tumor must be connected with the uterus by the utero-ovarian ligament; (3) the walls of the sac must contain graafian follicles and the albuginea of the ovary must pass directly into the tumor wall and (4) the embryo should be *in situ*.

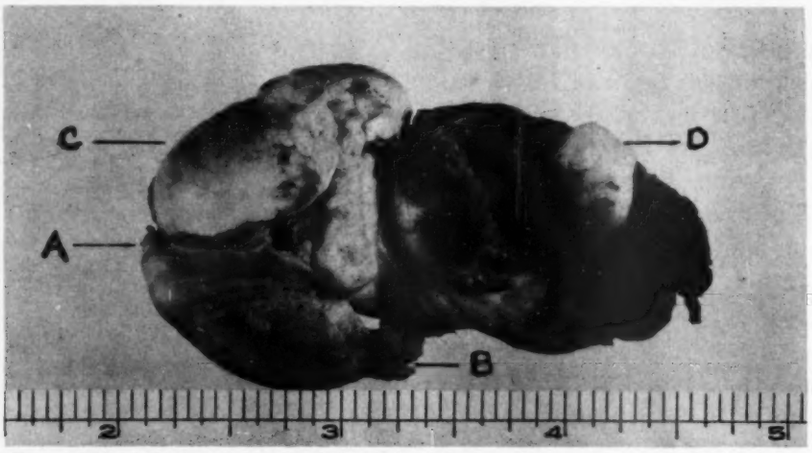

FIG. 1. The tube is seen to the left of the picture with the uterine and fallopian tube at (A) and the fimbriated end at (B). This outer end is *not* adherent to the ovary. The fetal sac in the outer portion of the ovary is clearly seen and the embryo is present at (D). The inner pole of the ovary is seen at (C).

CASE REPORT*

Mrs. W. H. J., a white female aged thirty-four, was the mother of three children; the youngest was four years of age. Her menstrual history was normal, her last normal period occurring on June 27, 1943. On July 21, 1943, she suffered an attack of severe abdominal pain referred to the epigastrium which required ¼ gr. morphine for relief. The pain soon settled in the lower right quadrant but the patient was up and about her home the following day conducting her household duties. On July 30, 1943, she suffered a similar attack of pain which also required morphine for relief. She was up again the next day but complained of soreness in the lower right quadrant.

On August 3, 1943, she was referred by her physician to a urologist for a possible renal

*It is through the courtesy of Dr. John Lucius McGehee, Memphis, Tenn., who sent the specimen to me that I report the above case of ovarian pregnancy.

calculus. The urologist found no abnormality in the urinary tract but during his examination the patient presented symptoms of mild shock and Dr. McGehee was called in consultation.

A diagnosis of ruptured tubal pregnancy was made and the patient was admitted to the hospital. She was given a blood transfusion and operated upon immediately. The abdominal cavity was found to be filled with blood and an ovarian pregnancy was removed.

The gross pathology revealed a specimen which consisted of an ovary measuring 6.5 cm. by 3.5 cm. The distal end of the ovary contained a fetal sac 2 cm. by 3.5 cm. containing an embryo of approximately three and one-half to four weeks' gestation. The stump of the ligament was present at the proximal end of the ovary. The fallopian tube was 3.5 cm. in length and was not connected with the fetal sac.

A FETUS from a missed abortion retained for a long period may undergo dissolution and partial absorption or mummification. Rarely, a lithopedion may form from the deposition of calcium salts within the mass.

From "The Management of Obstetric Difficulties" by Paul Titus (C. V. Mosby Company).

REPLACEMENT OF UPPER END OF THE FEMUR WITH FIBULAR GRAFT*

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THIS case is reported because it may be of interest to surgeons who are confronted with the necessity of removing considerable bone substance in the region of the upper end of the femur. The comparatively long follow-up (twenty-six years) indicates that marked structural disturbance is not inevitably followed by a poor functional result. A clear cut pathologic diagnosis of the primary lesion is not at hand but other features of the case seem to make it worthy of discussion.

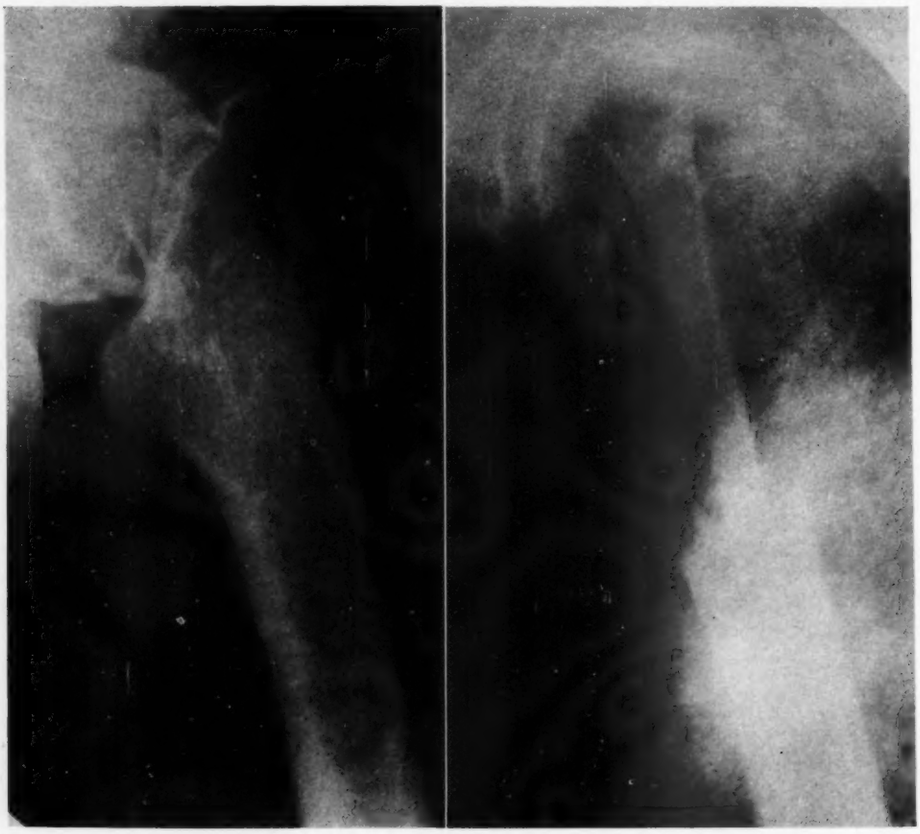

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FIG. 1. Roentgenogram showing cystic lesion in upper end of femur with pathologic fracture.

FIG. 2. Roentgenogram taken through plaster cast, showing immediate postoperative position of fibular graft.

CASE REPORT

D. D. G., No. 6071, a white woman of twenty-three years, was admitted to the Henry Ford Hospital on January 6, 1921, with the complaint of severe pain in the left hip. She had had some trouble with this hip since falling

* From the Department of Surgery, Henry Ford Hospital, Detroit, Mich.

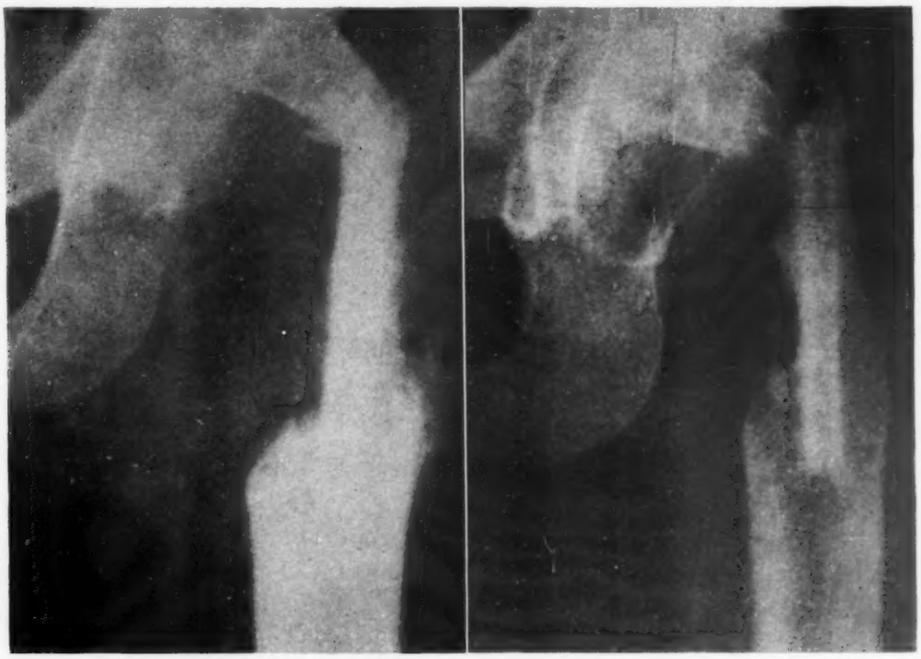

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Fig. 3. Fracture of fibular graft, (June, 1921).
Fig. 4. Non-union of fracture of graft, (March, 1922).

on the ice six years before. During the preceding three months, there had been considerable discomfort and for two weeks she had been in bed most of the time. The night before admission, she was walking home from a friend's house when she had sudden excruciating pain in the left hip and sank to the ground. She had to be carried home.

Examination showed marked restriction of motion in the left hip joint because of pain. There was soft tissue swelling in the region of the trochanter. There was atrophy of the left thigh and calf muscles. There were 2 inches of shortening of the left extremity. Roentgen examination revealed a fracture of the femoral neck with rarefaction of the adjacent bone substance. (Fig. 1.) The roentgenologist's impression was that a pathologic fracture was present. No other lesions of the skeleton were observed.

Operation was carried out on January 15, 1921. The following excerpt from the operative record indicates what was done after the hip joint was exposed: "Immediately when the capsule is opened, a dark clot of blood with tumor-like tissue is expelled. The muscles are stripped back from the femur to a point well below the lesser trochanter. The bone is normal up to the level of the lesser trochanter but above this, as it enters the capsule, it is rather soft. The capsule is turned back and it is found that there is a complete pathologic fracture of the neck of the femur as shown in the x-rays. A piece of the bone is removed and dark, soft mushy tumor with bone spicules in it is curetted out. The entire head of the femur is found to be filled with this substance. The head is pried out of the socket and the ligamentum teres is cut. There is no involvement of the acetabulum or synovial membrane. The tumor extends up into the greater trochanter and down the shaft to the lesser trochanter. First we had the idea of saving the lesser trochanter and sliding it up for the new head of the femur. However, it is thought advisable to remove on a level just below the lesser trochanter. This bone is removed with the curette and rongeur. The surrounding tissues are not involved. The entire capsule, however, is cut away."

This procedure left a bony defect of at least three inches. It was decided to insert a fibular graft. Accordingly, the head and about 10 cm. of the shaft of the left fibula were removed. The distal portion of the graft was thrust into the marrow cavity of the femur and the head was placed in the acetabulum. A plaster spica was applied, maintaining the thigh in abduction. (Fig. 2.)

When the excised tumor was first examined by a pathologist, a number of giant cells and

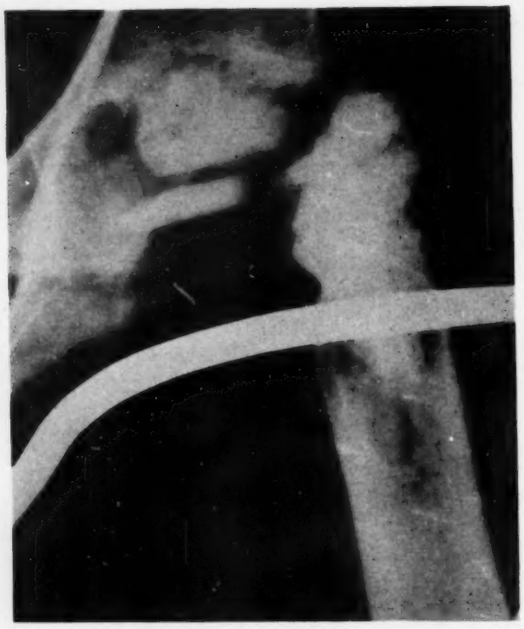

Fig. 5. Absorption of shaft of fibular graft and fracture of bone peg.

Fig. 6. Appearance of pseudoarthrosis of hip joint twenty-six years after primary operation.

spindle cells were observed. The diagnosis of giant cell sarcoma was entertained for a time but the gross appearance of the tumor and the subsequent clinical course make the diagnosis of benign giant cell tumor more tenable. The case is indexed as the latter in the Bone Sarcoma Registry of the American College of Surgeons (Registry No. 39).

When the cast was changed on February 11th, it was found that the wound had healed *per primam*. There was a left foot-drop, undoubtedly the result of injury to the peroneal nerve during the removal of the fibular graft. On March 28th, the second cast was removed and manipulation and massage were begun. A month later, the patient was allowed to bear weight cautiously on the extremity and was discharged.

After being home a month, she was walking upstairs and felt something snap in her leg. Roentgenograms showed a fracture of the graft. (Fig. 3.) A cast was applied to be followed in August by an ambulatory splint. There was some attempt at callus formation at the site of the fracture, but in March, 1922, it was evident that bony union could not be expected. (Fig. 4.) Accordingly, the site of the fracture was explored and an attempt to fix the fragments with a beef bone peg was carried out by Dr. Charles Peabody. Subsequent x-rays showed persistence of the non-union and a fracture of the bone peg. (Fig. 5.)

In December, 1922, the peroneal nerve was explored. The traumatized segment of nerve was removed and neurrhaphy was performed. This was followed by a return of sensation to the affected areas and little or no change in the muscular action.

In July, 1924, there was remarkably good function of the hip. The patient walked without a cane. The thigh could be flexed through an arc of 90 degrees. Progress examinations were carried out in 1926, 1929, 1937 and 1947.

The present status of the patient is summarized in the following note by Dr. C. L. Mitchell who examined her on March 12, 1947: "The patient is extremely well pleased with the result she has obtained. She is normally active and had had no discomfort in the left lower extremity for over twenty-five years. Recently she has noticed some grating on motion of the left hip but this has not been accompanied by pain. On examination, we find the patient to be moderately obese. There is two inches of shortening of the left lower extremity. The left foot is held in equinus and she is unable actively to dorsiflex the foot and great toe. Movement of the knee joint is normal. The range of motion of the hip joint is almost normal. Some

crepitus is noted. A slight amount of telescoping is possible. She walks with an elevation of the sole and heel of the left foot but with remarkably little limp. X-rays (Fig. 6) show a rounding of the upper end of the femoral shaft. A good portion of the fibular graft has become incorporated into the upper femoral shaft and there is a pseudo-arthrosis between the rounded end of the graft and the acetabulum. The original fibular head has become fused at the acetabulum and a portion of the beef bone graft can still be visualized at the false joint."

SUMMARY AND COMMENT

Excision of the upper end of the femur for what was probably a giant cell tumor was carried out twenty-six years ago. The utilization of a fibular graft resulted in a technical failure because of fracture and absorption of the graft. Nevertheless, a satisfactory functional result was obtained. Modern treatment of such a lesion would probably consist of thorough curettage and packing with bone chips.

A WOUND which involves the hip-joint from any aspect is likely to be devastating. Large vessels and nerves, more particularly the femoral vessels and the sciatic nerve, often are implicated and, in addition, the femur and the pelvic bones may be shattered.

From "Surgery of Modern Warfare" by Hamilton Bailey (The Williams and Wilkins Company).

BONE CYST

REGENERATION OF BONE FOLLOWING SUBPERIOSTEAL RESECTION

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United States Naval Reserve

LIEUT. COMDR. FRANK X. SANSONE
United States Naval Reserve

AND

LIEUT. COMDR. GEORGE W. WESTIN
United States Navy

AN interesting case of a cyst of the fibula is herein reported together with interesting x-ray films showing preoperative and postoperative status and the result four months after surgical excision.

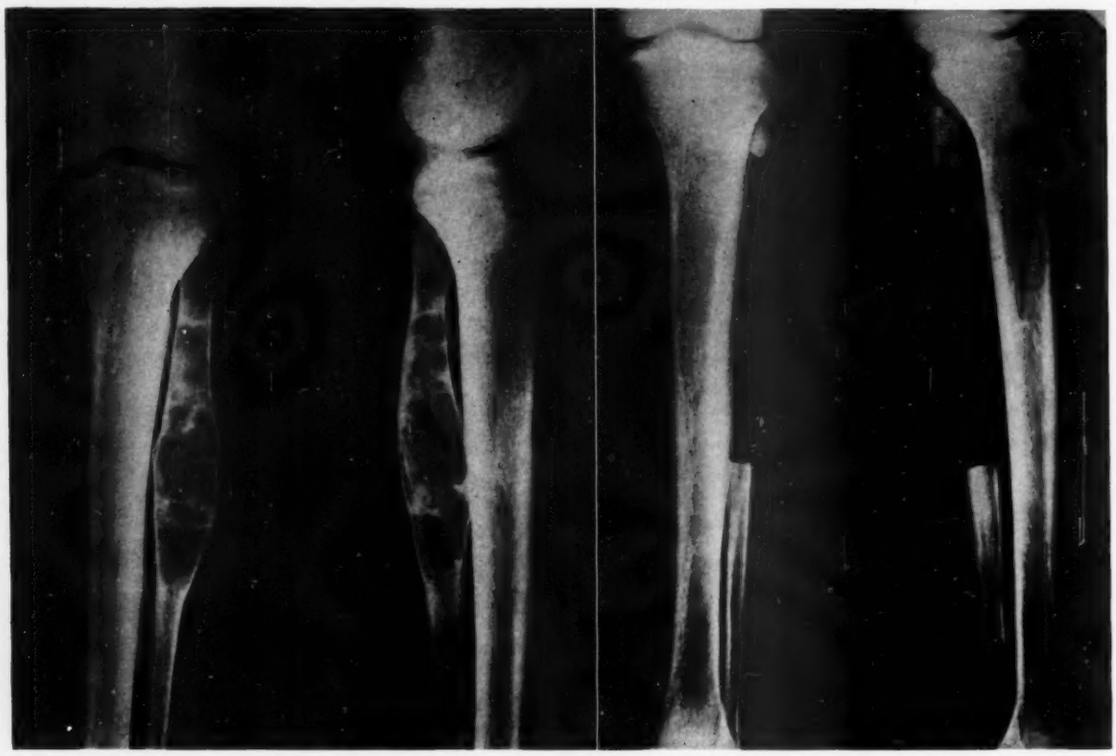

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FIG. 1. Bone cyst of fibula, showing transverse fracture through mid-portion.
FIG. 2. Postoperative x-ray showing excision of bone cyst.

CASE REPORT

A. P. G., eighteen years of age, of Italian parentage, was admitted to the hospital on October 28, 1945, complaining of pain and swelling over the lateral aspect of the proximal third of the left tibial and fibular regions. The patient stated that on the night of admission, he tripped and fell down a flight of stairs at his home bumping his left leg against several steps on the landing. He attempted to get up and walk but noted pain in his left leg which seemed to "give way." He stated that he had had a similar episode of injury to his left leg two years previously, for which he was bedridden for two days, but that he had been asymptomatic up to the present injury.

His past medical history disclosed that he had had the usual childhood diseases and a

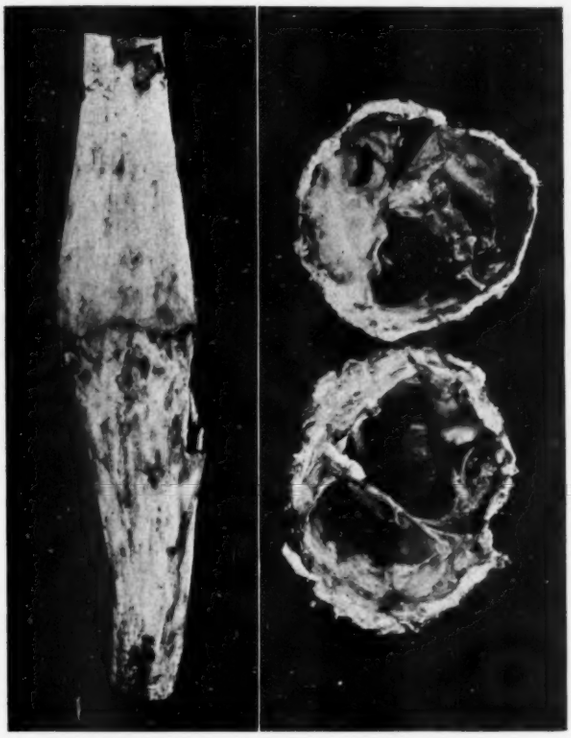

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Fig. 3. External view of specimen as removed.
Fig. 4. View of specimen as removed, bisected at fracture site.

Fig. 5. X-ray taken four months postoperatively, showing regeneration of fibular bone.

questionable fracture of the left scapula four years previous; he also fractured a phalanx of the right little finger eighteen months previous. His family history revealed that his mother and father were both living and well as were three siblings. A systemic review was essentially negative.

A physical examination revealed that his temperature was 98.6°F.; pulse, 76; respiration, 18 and blood pressure, 130/84. The patient was a well developed, well nourished, white Italian male complaining of pain in the left leg. His head, eyes, ears, nose and mouth were all normal. The heart had a normal rate and rhythm with no murmurs. His lungs were clear to percussion and auscultation. The abdomen was normal. There was a lesion 1 cm. in diameter on the dorsum of the penis which was moist and had a serous crust covering. Skeletal examination was normal except for the left leg. There was moderate swelling and tenderness on the lateral aspect of the proximal third of the fibula. There was no bone tenderness over the tibial crest or medial side. There was no limitation of motion of either ankle or knee.

X-ray examination of the left leg revealed a long, elliptical enlargement of the proximal third of the fibula. The periosteum was broken bilaterally at its central portion which was believed to represent an incomplete fracture at this site. The change had the appearance of a large bone cyst. (Fig. 1.) X-ray examination of all the other long bones of the body failed to reveal any evidence of bone or joint abnormality.

The laboratory studies showed: Red blood cells, 4,650,000; hemoglobin, 15.5 Gm.; white blood cells, 8,900; differential: 59 per cent segmented polys; 2 per cent eosinophiles; 39 per cent lymphocytes with no non-segmented forms, basophiles or monocytes. The sedimentation rate was 5 mm., per hour while the urine examination for Bence-Jones protein was negative. The blood calcium was 11 mg. per 100 cc., blood phosphorus, 4.7 mg. per 100 cc., blood alkaline phosphatase, 4.1 Bodansky units. Four repeated blood Kahn tests were negative.

Course and treatment. The penile lesion healed spontaneously without evidence of venereal infection. The patient was operated upon on November 9, 1945. Under pentothal anesthesia and with an Esmarch tourniquet placed at the mid-thigh a 20 cm. incision was

made lengthwise over the lateral aspect of the left fibula. The muscle masses were separated along fascial planes and the tumor was exposed. The periosteum was stripped from the normal looking bone and the bone was parted with a Gigli saw about 1 cm. proximal to and 1 cm. distal to the pathologic appearing bone. The entire specimen, measuring 18 cm. in length, was then dissected free from the surrounding muscles and removed *en bloc*. The large cystic area, measuring 3 cm. in diameter, in the central portion had a paper-thin cortex and contained clear, greenish-colored, thick, fluid material. There was a transverse fracture through the mid-portion of the large cyst. A culture was taken of the cystic fluid and was reported as positive for Staphylococcus albus, mannitol fermenting.

The wound was closed in layers with No. 0 chromic catgut and No. 0 nylon to the skin.

The pathologic report on the specimen was as follows: Macroscopically, the specimen consisted of two masses of bone measuring 9 by 2 by 3 cm., having a wedge-shaped contour and a cystic enlargement of the one end with a thin, outer envelope of cortex. Microscopically, the section showed bone trabeculae with many osteoblasts, much fibrosis and many cystic spaces containing free blood. The diagnosis was bone cyst.

The patient was given penicillin, 30,000 units every three hours, intramuscularly for eight days following the operation and ran an afebrile course. All sutures were removed on the eleventh postoperative day and the wound appeared well healed and clean; he was ambulatory with minimal symptoms.

One month postoperatively, the patient disclosed a small area of redness and swelling in the lower part of the incision which appeared to be a small hematoma. He was given penicillin and hot packs and a few days later two small draining sinuses appeared from which a culture was attained and was reported as non-hemolytic Staphylococcus albus. The patient was kept on penicillin and hot packs until January 27, 1946, when the wound was found to be dry. He then was sent on convalescent leave and, after being dry for eight weeks, he was discharged for duty.

X-rays were taken immediately postoperatively and four months postoperatively, the latter of which showed considerable regeneration of the fibula at the site of operative excision of the bone cyst. No union appeared to be established between the short proximal end and the longer distal end of the fibula. This area of bone regeneration presented several round or oval areas of diminished density which gave this new bone a cystic type of appearance. There was nothing to suggest any malignant change in this area. The mineral content of the proximal and distal fibular fragments continued to be good.

HEREDOFAMILIAL CLEFT FOOT DEFORMITY*

(LOBSTER-CLAW FOOT OR SPLIT FOOT)

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CLEFT foot, sometimes known as "lobster-claw foot" or "split foot," is a rare congenital deformity which has a definite tendency toward hereditary transmission. There are many variations of the deformity, and an exact or uniform description of it cannot be given, but the following general statements may be made: The usual deformity is one in which a cleft occurs at the second or third digit and extends a variable distance up the forefoot, perhaps involving even the tarsus, and is associated with a defect or absence of bones in proximity to the cleft. The portions to either side of the cleft are molded into a somewhat conical form usually terminating in distorted joints and giving an appearance not unlike that of a lobster claw.

Grand and Dolan, in 1936, reviewed the extant literature on cleft foot, reported three cases of their own and believed that all four extremities show the deformity, that the hands are never defective in the absence of the deformity of the foot nor is one foot ever deformed alone. The variations in the degree of the defect are many and may involve from one to four toes occasionally including the tarsus. The digits most commonly affected are those adjacent to the cleft. The first and fifth toes in the majority of cases escape. It is an invariable rule that the proximal bone is never absent when a corresponding distal one is present. Of the metacarpal bones which remain those bearing terminal phalanges are usually considerably thickened while those which have no phalanges show hypoplasia.

In our review of the literature through 1945, and in study of our patients, we have found nothing in conflict with the statements of Grand and Dolan. The deformities of the hand which accompany cleft foot are extremely variable; they include hands with webbed fingers, long thumbs, no thumbs, crooked thumbs, no fingernails, cleft fingernails, small fingernails and missing fingers.

The etiology of cleft foot and deformities of the hand has been made the subject of study by many geneticists. Recorded in the literature are many instances in which cleft foot anomalies have been traced through several generations. The cleft foot anomaly may be explained as a mendelian dominant character in which the distribution and ratio of the affected and unaffected persons is in accord with a single gene interpretation. The hereditary character is assumed to be completely dominant over the normal condition. More males than females are affected but there is not sufficient evidence to warrant consideration of the character as a sex linked, sex influenced or sex limited trait.

Before an attempt is made to treat these cleft foot anomalies for correction of deformity and to improve function it is necessary to have roentgenograms made in at least two planes in order to determine the exact bony structure present. The mere suturing of soft tissues after excision of the cleft may result in failure. In the feet proper, weight-bearing is essential and to obtain this osteotomy or excision of bone usually is required for permanent results. Care in preservation of the blood supply to the remaining digits is necessary for in these conditions the blood supply to the digits often is anomalous. The postoper-

* An operation devised for correction of deformity.

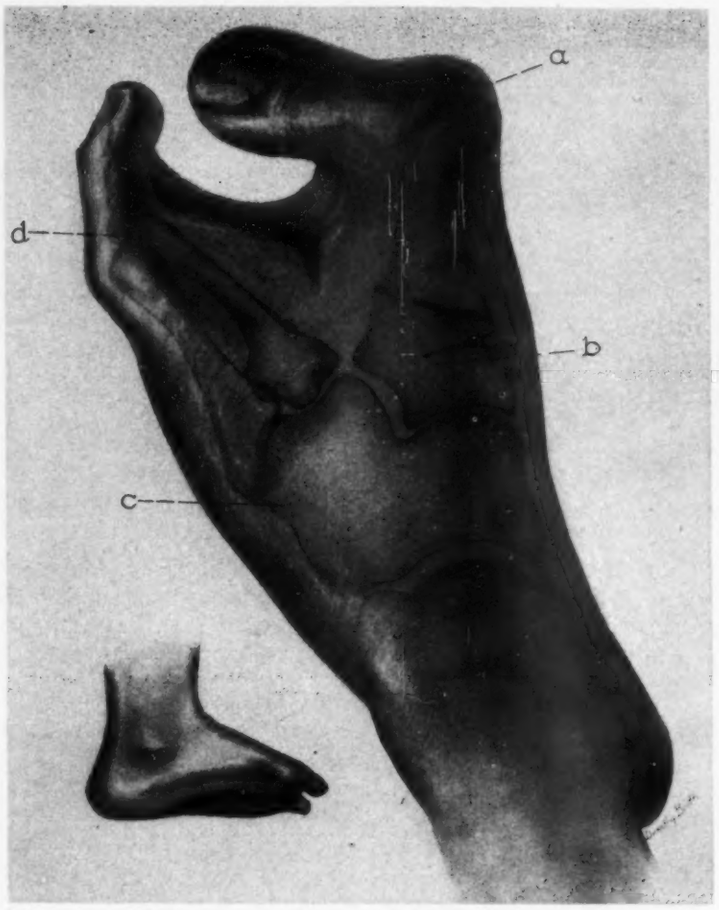

Fig. 1. Left foot, showing: *a*, marked hallux valgus and flexion deformity with bunion over the left great toe; *b*, congenital fusion of the first metatarsal bone with the internal cuneiform bone; *c*, congenital fusion of the cuboid, middle and external cuneiform and navicular bones; *d*, distal articulartion of the fourth and fifth metatarsal bones with the middle phalanx of the fifth toe. This drawing shows the actual fusion found at operation.

ative dressings must be carefully applied to allow for swelling. The circulation of the digits should be observed frequently after operation and, on the first evidence of impaired circulation, the dressings should be loosened. The first indications of impaired circulation usually are pain and swelling followed by cyanosis, with cold, clammy, sweaty digits. Elevation of the foot postoperatively will aid in keeping swelling to a minimum. The retentive dressing, plaster of paris casts or splints which maintain the corrected position resulting from surgery must be kept on until the bony parts have become firmly united. The use of specially built shoes postoperatively often is required. In some cases in which the deformity is not severe, specially built shoes may be all that is required.

The following case illustrates the cleft foot deformity and its surgical correction.

CASE REPORT

A white boy, fifteen years old, was admitted to the Mayo Clinic on June 20, 1946. He had been born with a congenital, bilateral lobster foot deformity in which there was a cleft of the forefoot between the first and fourth metatarsal bones with congenital absence of intervening structures. There was also a congenital web between the third and fourth fingers of the left hand. When the patient was six years of age, the clefts of the forefeet had been partially closed by a simple plastic procedure, performed elsewhere, without any bony reconstruction.

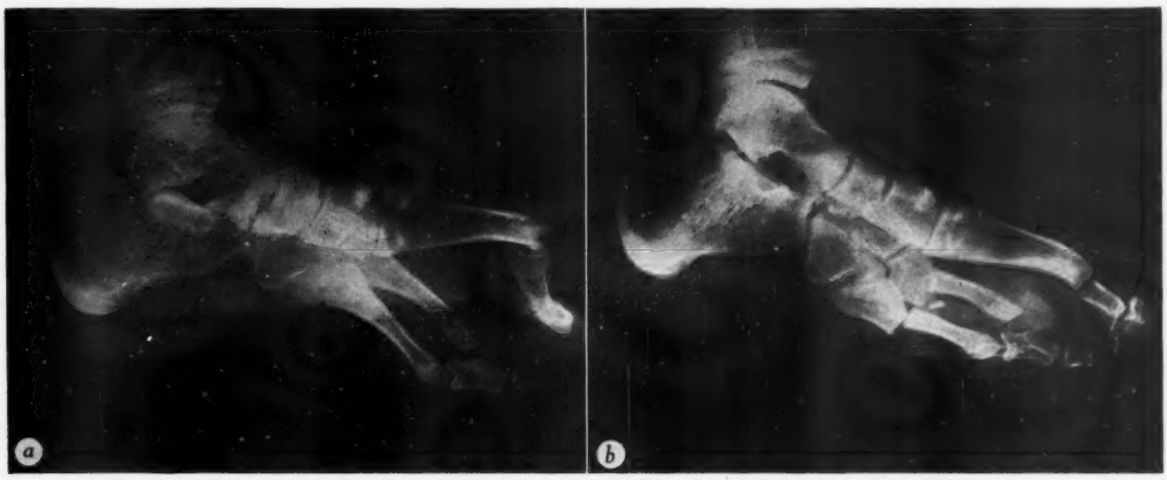

Fig. 2. *a*, Preoperative lateral roentgenograms; *b*, postoperative view of the same foot. The rudimentary joints appearing in these roentgenograms do not show the extent of fusion found at operation.

The boy had been able to walk well and had suffered no pain in the feet until he was fourteen years of age. At this time, he had begun to experience some pain from a "bunion" over the medial aspect of the head of the first metatarsal bone of the left foot. Accordingly, in the spring of 1945, a "bunionectomy" was performed elsewhere. After the operation marked hallux valgus deformity developed on the left with a painful bunion. The deformity of the great toe forced the patient to walk on the lateral aspect of the foot holding the foot in some degree of inversion. The marked hallux valgus deformity of the left foot, with its accompanying painful bunion and fixed inversion of the foot on walking, occasioned the patient's visit to the clinic.

Physical examination revealed congenital absence of the second and third metatarsal bones and the second, third and fourth toes in each foot with a cleft in the skin between the first and fourth metatarsal bones. Old operative scars at the base of the cleft indicated where the proximal aspect of the clefts had been closed previously. Hallux valgus was not present on the right and the foot exhibited no eversion or inversion on weight-bearing. Marked hallux valgus, with a bunion over the medial aspect of the head of the first metatarsal bone, was present on the left. (Fig. 1.) The nature of the hallux valgus deformity was such as to cause dorsal deviation of the first metatarsal bone and inversion of the foot upon walking. Slight varus of the forefoot also was present. Scars were present between the third and fourth fingers of the left hand as a result of operative procedures carried out elsewhere to separate a congenital web between these two fingers. Function was normal in the fingers except for slight limitation of extrusion of the third finger. The remainder of the general physical examination yielded negative results.

Roentgenograms of the feet (Fig. 2*a*) revealed a congenital absence of the second and third metatarsal bones and phalanges of the second, third and fourth digits bilaterally. Congenital fusion of the navicular bone with the cuboid, middle and external cuneiform bones and the internal cuneiform bone with the first metatarsal bone was seen bilaterally. Rudimentary joints could be seen in the roentgenograms outlining the joints about the cuneiform bones but on examination they were found to be fused. On the left, marked hallux valgus with medial and partial plantar dislocation of the proximal phalanx was seen. Results of roentgenograms of the thorax were negative. Routine examinations of the blood and urine revealed nothing abnormal and a serologic examination gave negative results.

On July 2, 1946, osteotomy was carried out on the fourth and fifth metatarsal bones. About ¾ inch (1.9 cm.) of the fourth metatarsal bone was excised; this permitted the deformed lateral portion of the foot and fifth toe to be brought mesially and somewhat dorsally. About three-fourths of the proximal phalanx of the great toe was resected and heavy scar tissue was removed to allow swinging of the great toe from its 80 degree lateral deformity into proper alignment forward. A dimple on the ball of the foot and a scar from the previous operative incision were

excised to facilitate approximation of the lateral and medial portions of the foot. The patient preferred not to have the right foot operated upon at that time.

On the ninth postoperative day, a cast extending from the toes to the knee was applied and the patient was permitted to be up on crutches and to return home. On August 8, 1946, five weeks postoperatively, the patient returned for re-examination. The cast was removed and the wounds were found to be healed. There was a much improved weight-bearing surface and a more normal appearing foot than existed prior to operation. (Fig. 2*b*.)

The patient returned to the clinic on July 7, 1947, for operation on the right foot, for he was very much pleased with the benefit derived from the operation on the left foot. Hence, a similar operation was performed on the right foot, after which a cast was applied. The cast was removed at the end of three weeks, at which time the wounds had healed, with primary intention. The stitches were removed and the patient returned home on July 30, 1947, with instructions to wear a cast, which we applied for three months.

REFERENCE

1. Grand, M. J. H. and Dolan, D. J. Heredofamilial cleft foot. *Am. J. Dis. Child.*, 51: 338–348, 1936.

Announcement: The American Urological Association offers an annual award of $1,000 (first prize of $500, second prize $300 and third prize $200) for essays on the result of some clinical or laboratory research in urology. Competition shall be limited to urologists who have been in such specific practice for not more than five years and to residents in urology in recognized hospitals.

For full particulars write the secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis, Tennessee. Essays must be in his hands before March 1, 1948.

A DANGER SIGNAL IN TRAUMATIC ANTERIOR DISLOCATION OF THE HIP

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A REVIEW of the literature reveals no mention of dilatation of superficial veins occurring after anterior hip dislocations.

CASE REPORT

A thirty-seven year old white soldier was admitted to an overseas Army General Hospital on September 2, 1945, in severe shock. The weapons carrier which he had been driving had crashed into a tree causing the following injuries: (1) Fracture, comminuted, lower half left femur and fracture, compound, comminuted, upper half of left tibia involving the knee joint, severe; (2) dislocation, simple, anterior type, hip, right, severe and (3) multiple lacerations, superficial.

The patient was in considerable shock and was somewhat irrational. Examination revealed markedly dilated veins measuring 1 to 2 cm. in diameter over the inner aspects of the right thigh and leg along the saphenous distribution. There was slight cyanosis of the foot. No pulsations were present in the posterior tibial artery or dorsalis pedis artery. The right lower extremity was held in abduction, external rotation and slight flexion at the hip. The knee was flexed and the lateral aspect of the right foot was resting on the floor. There was a marked prominence in the right femoral trigone region. The femoral pulse could be felt immediately above this area. The swelling was obviously bony in character and rotation of the hip caused motion of this mass which was identified as the head of the femur.

There was a gaping wound over the lateral aspect of the left upper leg. The left knee joint was greatly swollen. There was deformity in the region of the left knee joint. Swelling was moderate in the upper leg region.

Immediate treatment consisted of splinting of the lower extremities in Thomas leg splints. The wounds were temporarily dressed and shock treatment instituted for the next four hours. Three bottles of plasma and two pints of matched citrated blood were given intravenously. Blood pressure reached a level of 130/80. Medication consisted of one ½ gr. dose of morphine on admission, and one ¼ gr. dose of morphine along with 1/150 of atropine subcutaneously before operation, penicillin 40,000 units intramuscularly, and tetanus toxoid 1 cc. subcutaneously. Oxygen was administered before and during the operation.

Operation was started five hours after injury and was performed under satisfactory sodium pentothal anesthesia supplemented by oxygen. Kirschner wires were inserted into the lower left femur and into the upper and lower portions of the left tibia for subsequent reduction and suspension traction. The left leg wounds were débrided and dressed with sulfanilamide powder locally and vaseline gauze. Attention was then directed to the right hip. The pelvis was supported manually against the table by two assistants. The operator gently flexed the right thigh with moderate manual traction. The hip was slowly rotated internally with adduction. The head was felt to snap but careful examination revealed that the head had dislocated posteriorly. The extremity had assumed a position of flexion, internal rotation and adduction. A maneuver consisting of rotation, flexion, and moderate traction allowed satisfactory reduction of the head into the acetabulum. Just prior to the latter manipulation, the patient's respirations became accelerated with increasing hyperpnoea. Cyanosis developed and breathing gradually ceased. This episode took place in an interval of approximately three minutes. Last minute measures consisted of artificial respiration and injection of adrenalin into the jugular vein. During the operation, intravenous whole blood had been administered. Auscultation immediately following the change in the patient's condition and just prior to death revealed rapid, weak heart sounds and harsh breath sounds.

COMMENT

It was the consensus of the staff members, who were present during the operation, that death was due to the dislodgment of a thrombus in the right femoral vein and pulmonary embolism. This occurred presumably when the pressure of the femoral head against the great blood vessels was relieved during the reductions of the head into the acetabulum. The chain of events leading to the sudden change in respirations, particularly at the instant of hip reduction, seems to indicate that the locus of thrombus formation had occurred in the right femoral region during the five-hour period prior to reduction. There had been marked venous engorgement of the long saphenous system prior to reduction. The possibility of fat embolism was considered. The pulse and respirations were rapid and blood pressure was normal about five minutes prior to death. Sudden exodus occurred simultaneously with manipulative reduction of the hip. It was a little early for fat embolism to have occurred although early cases have been reported.

Anatomic diagnosis following autopsy was as follows: (1) Fracture, compound, comminuted, upper half of tibia, left, into knee joint; (2) fracture, simple, comminuted, lower half of femur, left, into knee joint; (3) multiple lacerations, superficial; (4) dislocation, anterior type, traumatic, hip, right, post-reduction; (5) embolism pulmonary, probable site of origin from femoral vein, right.

Autopsy Procedure on Right Hip Joint. A Smith-Petersen approach was made into the right hip joint. The head had been satisfactorily reduced in the acetabulum. The femoral head was dislocated by manipulation. Direct vision indicated that the head of the femur caused pressure against the posterior aspect of the great vessels in the femoral region. Section of these vessels, however, revealed no evidence of thrombus formation. The head was then carried through the same maneuver that had been attempted just prior to death and a posterior subluxation occurred. When the method of manipulation was reversed, a stable reduction was accomplished. The joint capsule was intact but there was evidence of relaxation.

Comment. If reduction of the hip could have been accomplished sooner than it was, death might not have occurred. The delay necessitated by shock treatment and the taking of x-rays in all probability contributed to thrombus formation in the femoral trigone region.

Venous engorgement of the saphenous system should serve as a sharp warning for the need of early reduction of anterior hip dislocations due to trauma if thrombosis and embolism are to be avoided.

SIMULTANEOUS OCCURRENCE OF MULTIPLE PRIMARY CARCINOMAS WITHIN THE ABDOMINAL CAVITY*

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THE following case of adenocarcinoma of the sigmoid colon and a papillary cyst adenocarcinoma of the ovary is reported because of the rarity of the occurrence of two separate and unrelated carcinomas in the same patient. The case is also of interest because of the sudden onset of the few symptoms in a patient apparently in good health until the present illness.

CASE REPORT

Mrs. E. C., a white female, aged fifty-five, was admitted to the hospital on August 25, 1946, with the chief complaint of abdominal distention and obstipation. The patient apparently had been in good health until July 25, 1946, at which time she suddenly became constipated. Three days later she noted increased abdominal growling, became alarmed and consulted her family physician. The prescribed therapy failed to control the symptoms which increased in severity and were accompanied by abdominal distention and constant cramp-like pains. The odor of food nauseated the patient and she began to vomit frequently. On August 5th, she sought the advice of a second physician and three days later, after numerous enemas and laxatives, the bowels moved for the first time in two weeks. During the next few days there was slight bowel action, the stool being soft and small in amount. On August 12th, the patient again reported constipation. Two days later she was referred to a roentgenologist for a gastrointestinal examination during the first part of which she drank a glass of barium suspension and afterward returned home. That night she became acutely ill and failed to complete the roentgen-ray examination. The earlier symptoms of abdominal distention and cramp-like pains recurred and on August 24th a third physician advised immediate hospitalization.† The previous medical history of the patient was irrelevant.

On admission the patient appeared acutely ill. The skin was pale and dry; the oral temperature was 101°F. The significant physical findings, with the exception of small grade I internal hemorrhoids, were limited to the abdomen which was markedly distended and tympanitic throughout, with tenderness to palpation in the left lower quadrant. Sigmoidoscopic examination, extending as high as 24 cm., revealed no abnormalities.

The laboratory data on admission August 25, 1946, were as follows: Examination of the blood revealed a red cell count of 4,890,000, a hemoglobin content of 15.8 Gm. per 100 cc., and a white cell count of 6,400 with a differential count of polymorphonuclears 69 per cent, lymphocytes 28 per cent, and monocytes 3 per cent. Urinalysis of a voided specimen showed a 2 plus turbidity, 3 plus acetone and many pus cells. Blood chemistry studies showed the non-protein nitrogen to be 76.5 mg. per cent, plasma chlorides 498 mg. per cent and the plasma protein 5.55 mg. per cent. The blood type was AB. Roentgen-ray findings from a flat plate of the abdomen made at the time of admission revealed barium outlining the large bowel. No barium could be visualized in the rectum, suggesting that there was an obstruction in the large bowel near the rectosigmoid junction.

Fluoroscopic examination on August 28th showed the large bowel still distended and outlined by the barium. At this time a left transverse colostomy and cecostomy was done to wash out the barium and relieve the obstruction. The immediate postoperative condition of the patient was good and the symptoms of obstruction rapidly disappeared.

Thirty-seven days later, on October 4th, a

† Case referred through the courtesy of A. J. Huesman, M.D.

* From the Surgical Service, St. Mary's Hospital, Cincinnati, Ohio.

Miles type of combined abdominoperineal resection and a radical Wertheim hysterectomy were done. A bowel segment 38 cm. in length was removed incorporating the sigmoid colon with the adjacent mesenteric tissue, the rectum, a section of anal skin and fatty tissue. No lymph node enlargement was noted at this time. There were no metastases to the liver. The patient reacted well postoperatively. The colostomies were subsequently closed proximal to the lesion and the patient was discharged from the hospital January 16, 1947.

The pathologist's report was as follows: A tumor mass on the right ovary consisted of a multilocular cyst with a glistening translucent surface, measuring 12 cm. in diameter, containing turbid mucinous fluid. The lining was smooth and membraneous except for clusters of soft, light tan adenomatous cysts, the largest measuring 4 cm. in diameter, implanted on its surface. In another area of the tumor mass there was a cluster of small cysts containing serous and pseudomucinous fluid. Microscopically, the tumor tissue was papillary adenocarcinoma, with numerous acini of irregular size, some of which contained mucoid material. The nuclei were hyperchromatic. There was some invasion of the underlying stroma by the epithelial cells. Areas of necrosis occurred throughout the tumor. The remaining portion of the right ovary had a thickened tunica and measured 4 cm. in length. On section, the normal tissue had been replaced by a mass of soft, pultaceous, light tan irridescent material. The left ovary macroscopically was not remarkable but on section there was a large area of degenerating material mixed with a fibrous stroma containing numerous clefts formed by giant cells and distended phagocytes filled with a brown pigment. Beneath the serosa near the fundus of the uterus was a small myomatous tumor 2 cm. in diameter consisting of benign intertwining smooth muscle fibers. The endometrium was soft, pinkish red and atrophic except for a small polyp 4 mm. in its greatest extent; microscopically, the endometrium was not remarkable.

In the sigmoid colon 29 cm. from the anus was a constricting annular tumor 2.5 cm. in its largest extent. It involved the entire circumference of the mucosal surface except for a narrow section 9 mm. in width. The tumor was a primary adenocarcinoma, grade 3, arising from the mucous membrane and involving all the layers of the intestinal wall except the serosa which grossly did not appear to be invaded. The mucosal portion of the tumor was sharply delimited peripherally from the adjacent normal appearing mucosa. The tumor cells contained moderately anaplastic mitotic figures. There were no discernible lymph nodes in the mesentery segment either at the tumor site or elsewhere along the portion of bowel removed. A small white nodule in the areolar fatty tissue proved on section to be metastatic adenocarcinoma.

Diagnosis: A diagnosis was made of (1) papillary cyst adenocarcinoma of the ovary, (2) adenocarcinoma of the sigmoid colon, grade 3 with metastasis and (3) leiomyoma uteri.

Comment. While the condition of multiple primary carcinomas is not rare, the simultaneous occurrence of multiple primary carcinomas within the abdominal cavity is quite rare. Within the ten-year period of 1936 to 1946 no instance of this was found in the records of St. Mary's Hospital, Cincinnati, Ohio. At Memorial Hospital,* New York, there have been 370 cases of multiple primary carcinomas in the past ten years. In some of these the tumors did not occur simultaneously; in no case did two separate and independent lesions develop simultaneously within the abdominal cavity.

SUMMARY

A case is reported of the occurrence in the same patient of two simultaneously growing primary carcinomas, the one a papillary cyst adenocarcinoma of the ovary, the other an adenocarcinoma of the sigmoid colon, grade 3, with metastasis, together with a leiomyoma uteri.

* Personal communication, John L. Pool, M.D.

New Instruments

HIP NAILING BOARD

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AN orthopedic table with a cassette holder is not always available when and where the surgeon wishes to nail a hip. An extra assistant may not be available to hold the leg during the operation. A combination cassette and leg holder placed on any operating table solves these two problems. The reduction is accurately maintained during the operation and the taking of x-rays is facilitated. (Figs. 1 to 4.)

The combination cassette and leg holder replaces the center section of the pad on any operating table. The cassette is inserted from the side opposite the hip to be nailed and the x-ray is operated from the same side. After anesthesia is induced neck fractures are reduced by the Leadbetter method; the foot of the table is dropped and the leg of the patient is locked in internal rotation with the knee flexed at an 80 degree angle. The opposite leg is likewise locked to "fix" the pelvis. A small pillow or pad is placed under each knee to protect the peroneal nerve. Only the operation site need be prepared. A sterile lap sheet is used to cover the patient.

The table is tipped in a Trendelenburg position so that the pull of the body on the inclined plane will produce sufficient traction to maintain proper valgus position of the head of the femur. A 10 to 20 degree angle will suffice for neck fractures while a 30 to 40 degree angle may be required for intertrochanteric types. Neck fractures require maximum internal rotation; trochanteric fractures may reduce better by placing the femur in neutral position or slight external rotation.

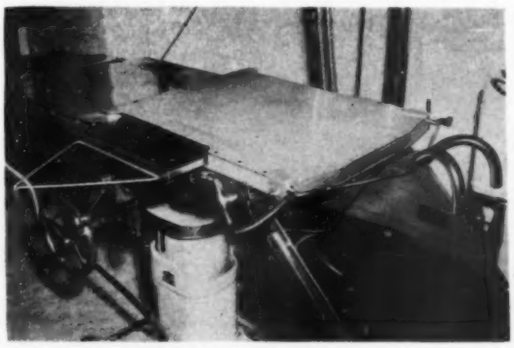
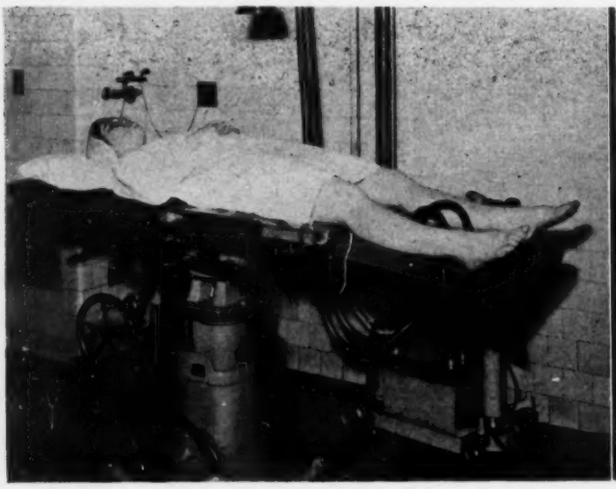


FIG. 1. Position of hip nailing board on operating table, showing cassette partially inserted.

After guide wires, nail or pins are inserted lateral x-rays are best taken by unlocking the leg and holding it in a position of abduction, flexion and external rotation. The operator may thus position the leg by unlocking the holder and grasping the knee and ankle through the sterile drapes. This brings the neck parallel to the cassette and the position of the tube need not be changed. If preferred, lateral x-rays may be taken without unlocking the leg by positioning the tube to shoot past the opposite knee with the casette held in a sterile pillow case obliquely against the hip.



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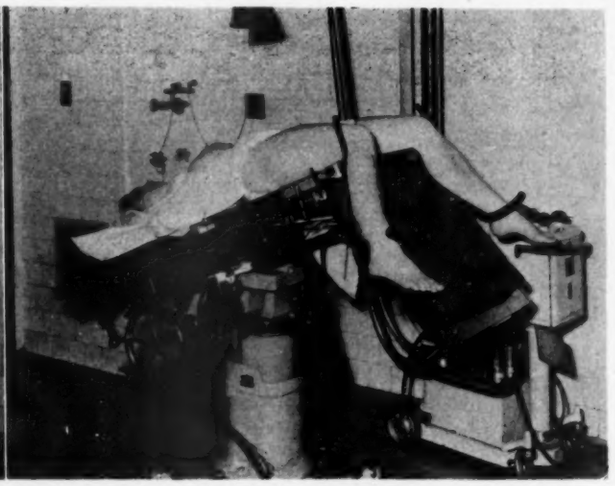

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FIG. 2. Preoperative position of patient.
FIG. 3. Trendelenburg position for traction with leg locked in internal rotation.

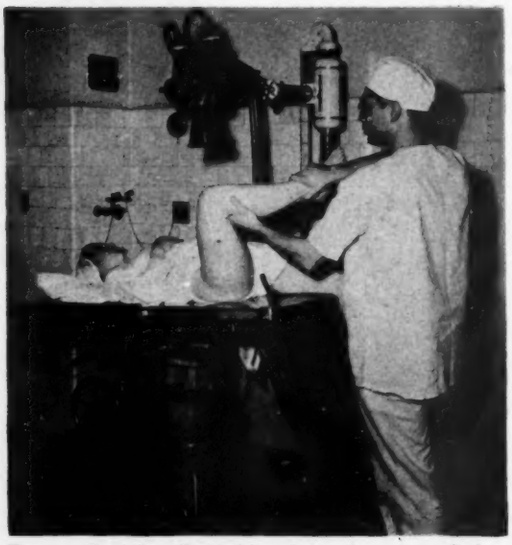

FIG. 4. Position for taking lateral x-rays of the femoral neck.

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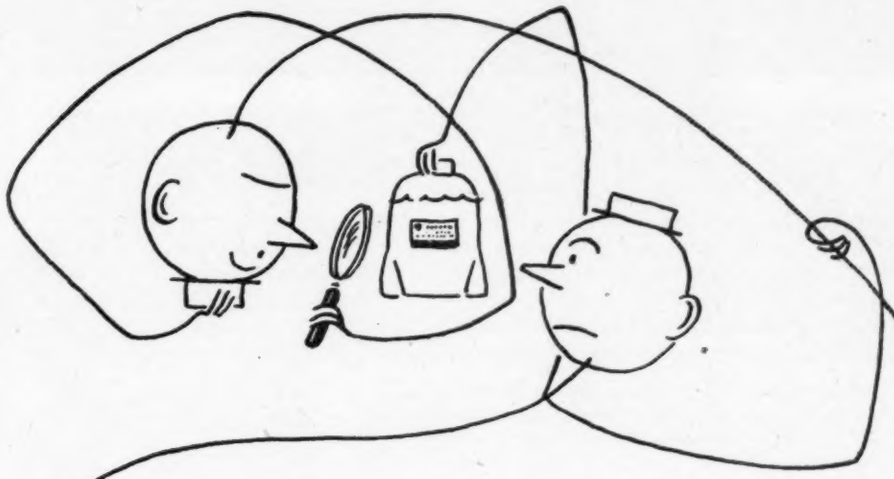

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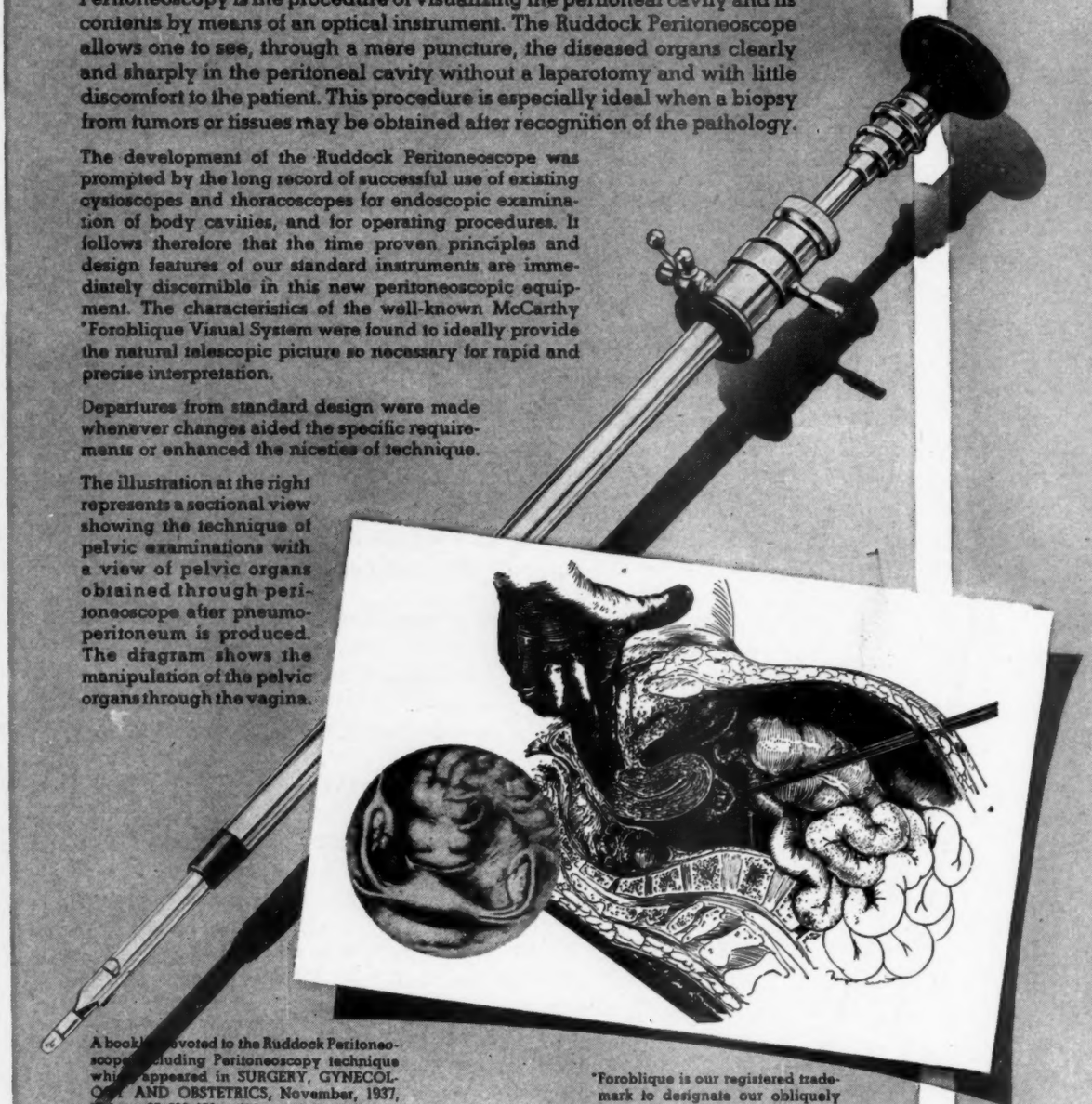
The illustration at the right represents a sectional view showing the technique of pelvic examinations with a view of pelvic organs obtained through peritoneoscope after pneumoperitoneum is produced. The diagram shows the manipulation of the pelvic organs through the vagina.



A booklet devoted to the Ruddock Peritoneoscope including Peritoneoscopy technique which appeared in SURGERY, GYNECOLOGY AND OBSTETRICS, November, 1937, Volume 65, 623-639, will be mailed on request.

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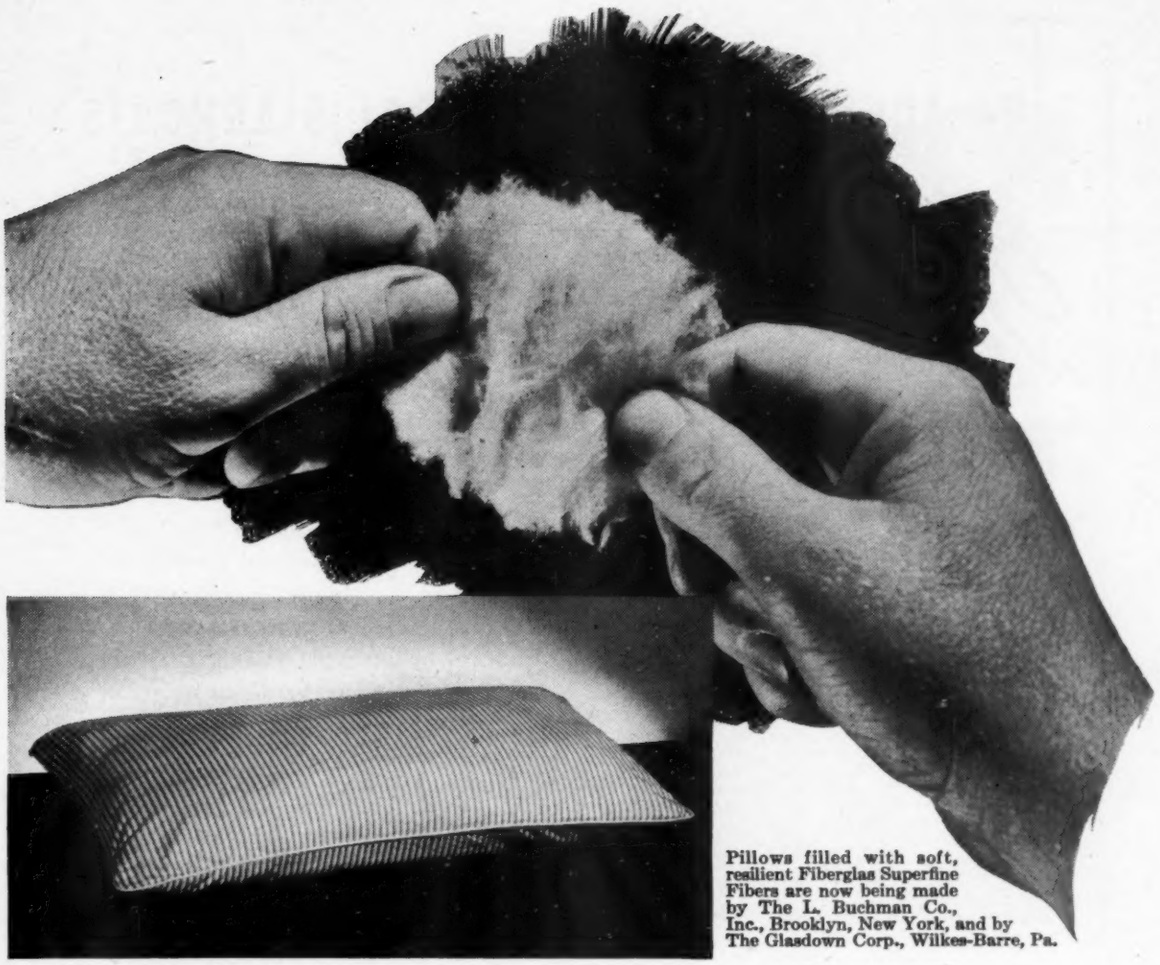

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Decompensation
Peripheral vascular disease

Endocrine Disturbances
Hyperthyroid
Menopause—female, male

Nausea and Vomiting
Functional or organic disease (acute gastrointestinal and emotional)
X-ray sickness
Pregnancy
Motion sickness

Gastrointestinal Disorders
Cardiospasm[2]
Pylorospasm[2]
Spasm of biliary tract[2]
Spasm of colon[2]
Peptic ulcer[2]
Colitis[2]
Biliary dyskinesia

Allergic Disorders
Irritability
To combat stimulation of ephedrine alone, etc.[3,1]

Irritability Associated With Infections[4]

Restlessness and Irritability With Pain[5,4]

Central Nervous System
Paralysis agitans
Chorea
Hysteria
Delirium tremens
Mania

Anticonvulsant
Traumatic
Tetanus
Strychnine
Eclampsia
Status epilepticus
Anesthesia

HYPNOTIC
Induction of Sleep

OBSTETRICAL
Nausea and Vomiting
Eclampsia
Amnesia and Analgesia[6]

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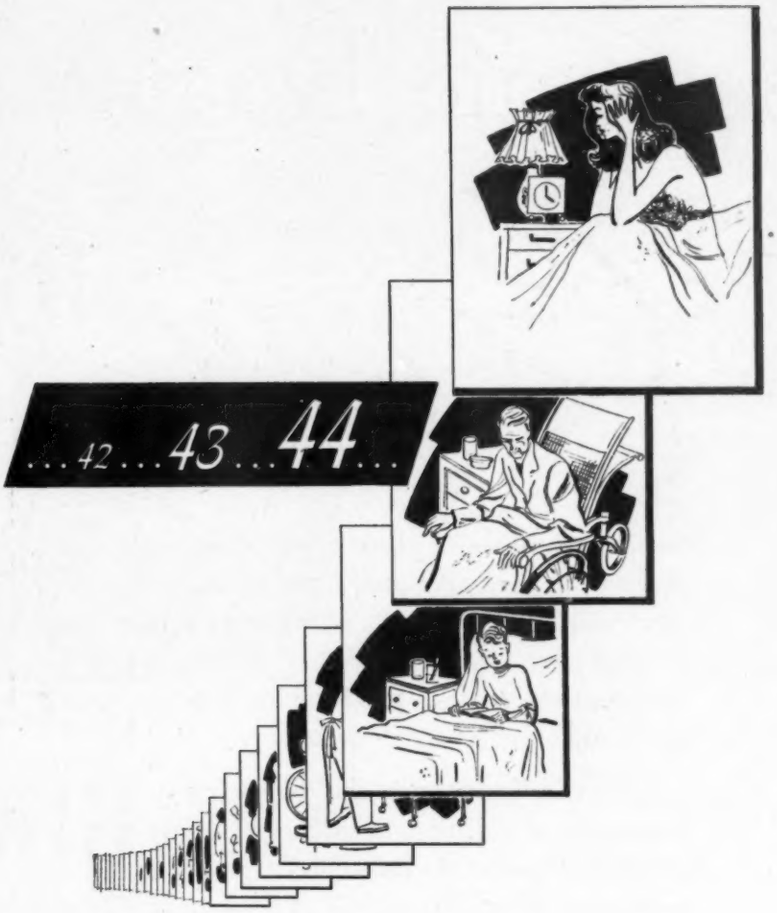

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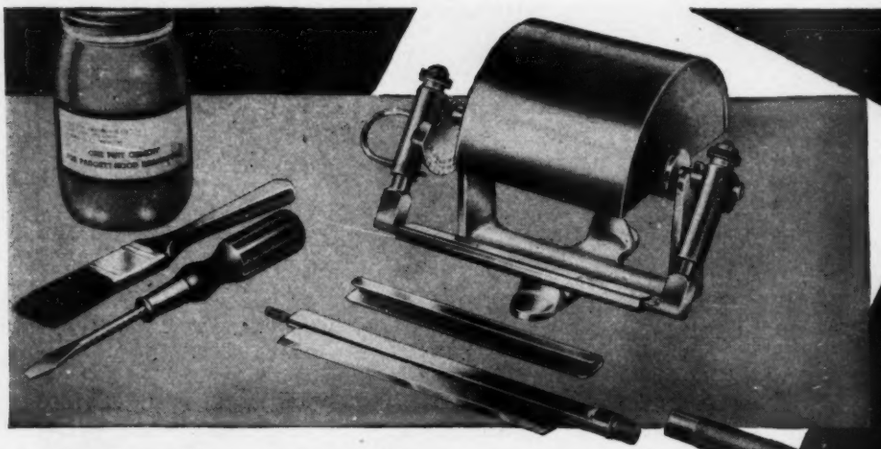

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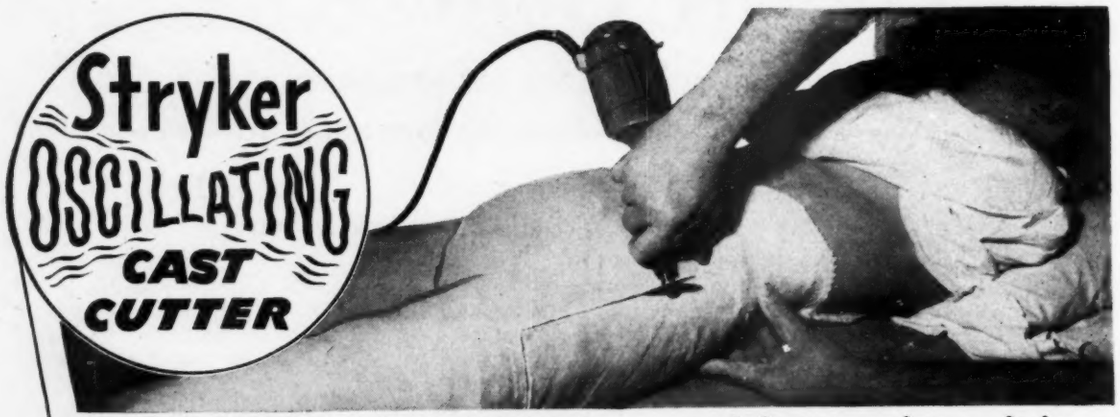

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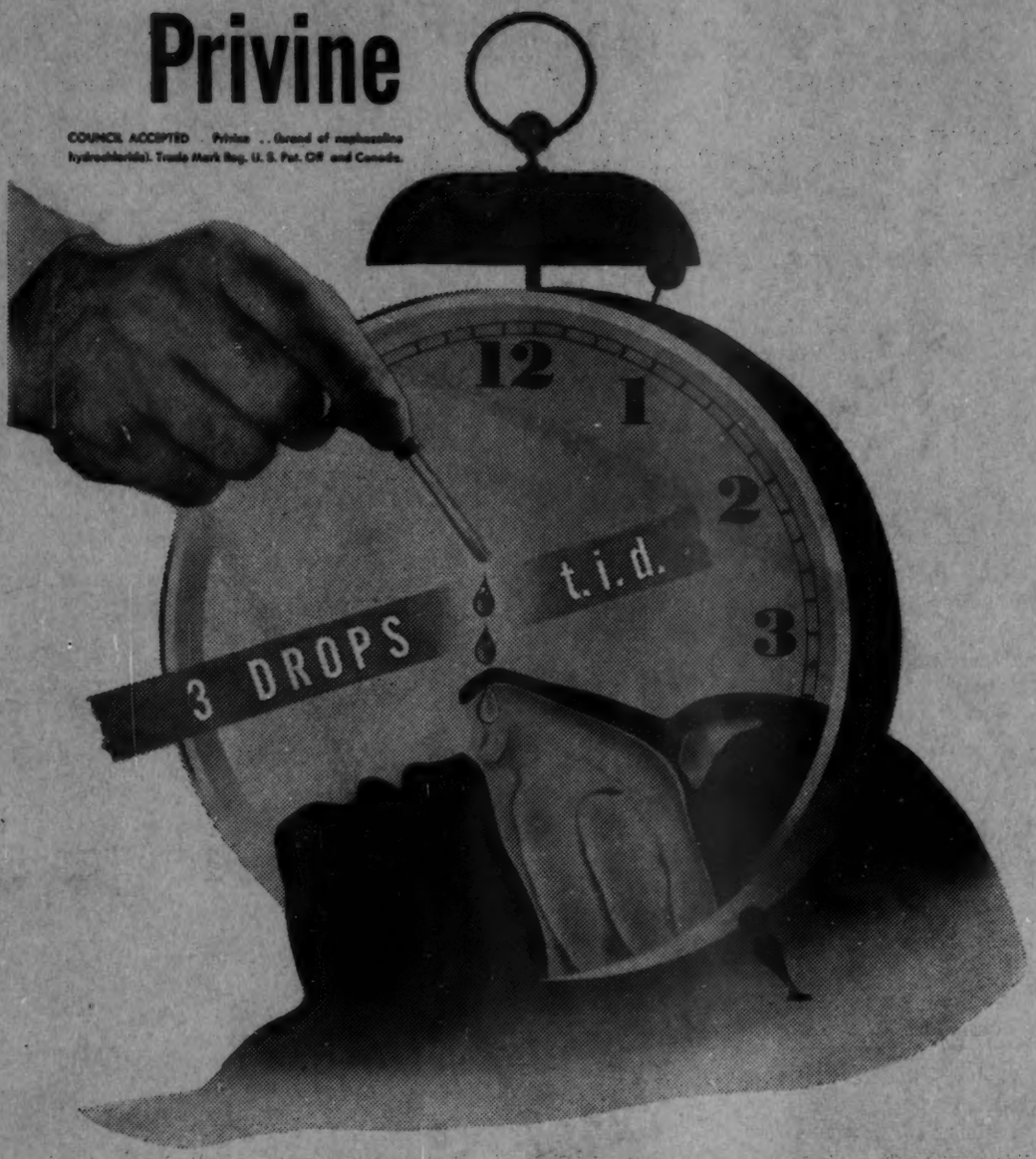

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